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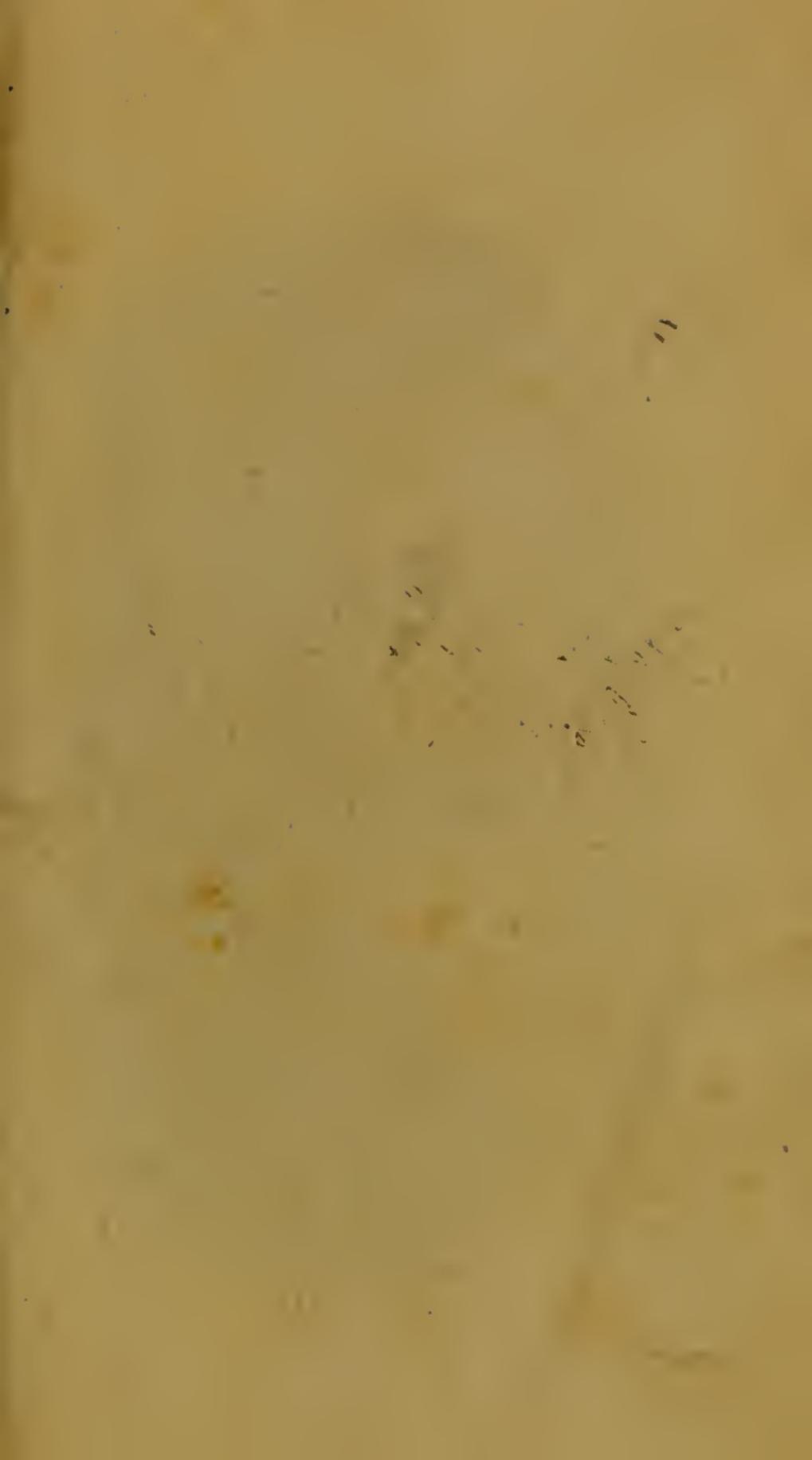
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ROCKS AT MOULIN HUET, GUERNSEY.



RAMBLES

AMONG

THE CHANNEL ISLANDS.

BY A NATURALIST.

PUBLISHED UNDER THE DIRECTION OF
THE COMMITTEE OF GENERAL LITERATURE AND EDUCATION,
APPOINTED BY THE SOCIETY FOR PROMOTING
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INTRODUCTION.

THE Writer of the present work, while endeavouring to preserve its scientific accuracy, has not sought to render the volume only of interest to scientific readers. His object has been to offer a popular survey of the interesting group of Islands to the more accurate knowledge of which his book may serve as an introduction to the general reader.

This work was never intended to be a mere visitors' handbook, and no attempt to make it such would have been consistent with its general plan. But it will assist the visitor to

a better knowledge of the romantic and interesting scenery which these Islands present; and if the natural history of this scenery have any charms for him, he will probably find it a useful, and, it may be hoped, an instructive companion.

The writer is under obligations to several eminent men of science residing in the Islands, for their assistance in the preparation of portions of the work, and for their careful correction of the sheets in its progress. Among this number he may be permitted to name Dr. S. E. Hoskins, F.R.S., and F. C. Lukis, Esq. F.S.A.

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HARBOUR AT ST. PETER PORT, GUERNSEY.

CHAPTER I.

HISTORICAL OUTLINE.

IF we would investigate the early state of the interesting group of islands among which we propose to conduct the reader, we find that our researches can only carry us back to a period about and prior to which all is dark and confused. As in all history, so in that of these small islands, authentic records are only

of a comparatively recent date. Tradition and fable, and often pure invention, fill up the long interval antecedent to the date of truthful history. It is owing perhaps to their insular position, and proximity to the French coast, combined to the difficulties which until late years attended the passage of travellers to the islands, that so much ignorance prevails as to their history in the parent country.

The Channel Islands, in many respects highly deserving of the notice of the naturalist and traveller, nor less of the student of history and antiquity, have been most singularly neglected. In reference to this it has been said, that less is known of the Channel Islands than of any other colony or dependency of the British crown of equal size and importance. It has even been asserted that more is actually known, and more accurate information is to be gathered from authentic sources, respecting the smallest of the colonies which lie in the Atlantic or Indian Oceans, than respecting Jersey or Guernsey, or the other islands of this group; and this appears the more extraordinary when we consider that there are certain points of interest attached to the Channel Islands peculiarly their own, and which essentially distinguish them from the other colonies and dependencies of Great Britain. Among

them may be enumerated their connexion with the Norman conquest, and long dependence upon the British crown; their separate and independent constitution; the peculiar laws by which they are governed; their singular privileges; their native civilized inhabitants; their vicinity to the coast of France, and the general use of the French language. To these may be added the variety of interesting points which their natural history presents to the geologist, botanist, and zoologist. We shall attempt in the following pages to supply the deficiency thus existing.

Information respecting the early history of these islands appears to be furnished to us in their names. There appears to be little doubt that the names of the islands at present in use are corruptions of ancient Latin names. The following is the account of these names which is most generally accepted. Guernsey was anciently called Sarnia; Jersey, Cæsarea; Alderney, Aurica; Sark, Sargia; Herm, Armia. Hence it seems probable that the Channel Islands were known to the Romans. In the Commentaries of Julius Cæsar there are some islands mentioned which were supposed by him to be formed by the action of the tides, and to which some of the Britons are stated to have taken flight. These islands have been

considered to represent those in question. It is probable that at least the largest islands of the group were in the occupation of the Gauls prior to the invasion of Britain by Cæsar. Numerous Celtic remains have been discovered in the islands, which prove that they were occupied at a very remote period. That the Romans for some time held possession of them, appears probable from the existence of ruined fortifications of Roman character. At the romantic and precipitous part of the southern coast of Guernsey, called Jerbourg,—a name derived, it is said, from a corruption of the words *Cæsar's burgum*,—there are the remains of a Roman trench, and other evidences of the spot having been at a former period selected for defence by this warlike people. In Jersey, adjoining to Mont Orgueil castle, and having a communication with it, there is an old fortification called to this day Cæsar's Fort, a Roman camp having been supposed to have formerly existed near one of the manors in the same island. Some Roman coins of the later periods of the empire have also been discovered in this island.

Little or nothing upon which reliance can be placed is known of the interval from the period in question down to about the middle of the sixth century. It appears that the Saxon

invaders, who had carried desolation among the inhabitants of the plains in England, driving them to the sea-coast, or to inaccessible fastnesses in the mountains of Wales, were instrumental in assisting to colonise the Channel



ST. SAMPSON'S HARBOUR.

Islands by the expulsion of the flying aborigines from their homes in England. Some of them fled to Brittany, and others, it is supposed, took refuge in these islands, where they continued in safety from the fury of the invaders. This took place, probably, about the com-

mencement of the sixth century. About the same period, Sampson, Bishop of St. David's in Pembrokeshire, quitted his native country, and went over into Brittany, where he received the bishopric of Dol, to which Childebert, then King of France, added Guernsey and Jersey, with the other islands contiguous to them. This bishop appears to have visited Guernsey, and was probably the first who introduced the knowledge of Christianity into the island. The port where he landed is called St. Sampson's harbour to this day, and the bishop is said there to have erected a small chapel.

Sampson was succeeded in his episcopal office by a relation of the name of Maglorius, who is said to have visited the islands and preached the Gospel among their inhabitants about the year 565. He appears first to have landed at Sark, where he founded a sort of missionary house, which it is interesting to find was still in existence eight hundred years subsequently, as may be gathered from a record in the Remembrancer's office, from which it is evident that a small sum for the support of this establishment was allowed by the crown. In Guernsey, Maglorius built a chapel in the parish of the Vale; and though the building itself has long since gone to decay,

the site is still recognised, and is called by the inhabitants St. Maliere, an evident corruption of the word Maglorius. In Jersey the success of this pious and zealous missionary among the pagan occupants of that island was remarkable. There, by his powerful preaching and by his exemplary life, the word of the Gospel proved so great a blessing to the inhabitants, that it is said they all cast away their idolatrous rites and practices, and, including their governor, were baptized into the Christian faith by the Bishop himself. There Maglorius died, and was buried in a little chapel, the foundations of which are still pointed out in the parish of St. Saviour's. Thus, says the historian Falle, "Thus did Christianity gain an entrance into these islands, and that at a time when it was yet pure, unmixed with any hurtful errors, either in faith or practice. It was the same Christianity which the old British Churches professed antecedently to Austin's mission into England by Gregory the Great. For they who first preached it to us were themselves ministers of those Churches."

About the ninth century a horde of pirates, banded together under the name of Sarrazins, distinguished themselves in the annals of these islands. Their very name inspired terror along the coast of France, and their career was

marked with bloodshed and desolation in every direction in which they pushed their piratical expeditions. By the advantage of their light vessels, historians tell us that they went up the rivers, and penetrated into the very heart of Franee, sacking and burning the towns, shedding torrents of human blood, and carrying ruin and desolation in their progress. They struck such terror throughout all Franee, that in the Litany, after the words, "From plague, pestilence, and famine," were added, "and from the fury of the Sarrazins, good Lord deliver us." These pirates are accused of having murdered a pious man, who, having withdrawn from the world, established himself in a little hermitage upon a rock at the entrance of the harbour of St. Helier's, Jersey. The remains of this hermitage are still visible, and form one of the attractions to which the attention of visitors is often directed.

The Sarrazins, sensible of the natural advantages offered by reason of the inaccessible nature of the waters around the Channel Islands, selected Guernsey for the erection of a strong fortification, called the castle of Geoffrey the Grand Sarrazin. This fort was situated on an eminence nearly in the centre of the island, and commanded from its summit a beautiful and expansive view of the ocean and

all the bays and principal landing-places on the coast. It is the site of the modern church, called by the peasantry the Câtel, or Castle Church. The north and eastern walls of this structure



CATEL CHURCH, GUERNSEY.

appear to be older than the others, and some stones project from them which appear to have formed the supports of gates in past time.

A more interesting, and, indeed, a more authentic period in the history of these islands now opens before us. In the year 912, Charles the Simple, King of France, ceded to Rollo, a Norwegian chieftain, the province now called Normandy, of which he became the first duke.

This chieftain appears to have been a wise, and, it is said, became a Christian governor. His laws were certainly well adapted to the necessities of the state he governed. A singular custom still prevails in Guernsey and Jersey, which, if not originating with Rollo himself, shows the sacred light in which the people regarded his laws and justice. The custom is this:—in case of encroachment or invasions of property, or, in fact, of any other act of oppression and violence requiring a prompt remedy, the injured person calls aloud upon the name of Rollo three times, repeating the words, “*Ha—Ro, à l'aide, mon Prince;*” which is an appeal to Rollo for succour. This singular method of appeal is held so sacred, that the aggressor immediately desists, and nothing further can be done by him until the matter of dispute has been settled by a court of law. The following remarkable anecdote will show in how solemn a light the “*Clameur de Haro,*” as this form of appeal is called, was considered. One hundred and seventy years after the death of Rollo, the remarkable event occurred to which we allude. The occasion was the funeral of William the Conqueror. It appears that in order to build the great abbey of St. Stephen at Caen, in Normandy, where he intended to place his own tomb, William had caused several

houses to be pulled down for the purpose of enlarging the area, and amongst them one whose owner had received no satisfaction for his loss. The son of this person, observing that the grave of the Conqueror was being prepared in the very spot of ground which had formerly belonged to his father, came fearlessly into the assembly, and in the name of Rollo forbade them to proceed with their work. He is said to have made use of the following bold language:—“The ground wherein you are going to lay this man is mine, and I affirm that none may in justice bury their dead in ground which belongs to another. If force and violence are still used to detain my right from me, I appeal to Rollo, the founder and father of our nation, who, though dead, lives in his laws. I take refuge in those laws, owning no authority above them.” This courageous appeal, made in the presence of the deceased monarch’s own son, produced a striking effect: the undertaking was immediately suspended, the man’s claims were adjusted to his satisfaction, upon which he withdrew his opposition, and the body of the king was laid in the grave. Pope alludes to this incident in his “Windsor Forest,” in the following lines:—

“ But see, the man who spacious regions gave
A waste for beasts, himself denied a grave.”

Trials in this peculiar form of appeal are still frequently brought before the royal court of Jersey. The prosecution is carried on by the crown, and the losing party, whether plaintiff or defendant, pays a small fine to the sovereign, because the sacred name of Rollo is not to be causelessly invoked.

For some lapses of time, history is again almost silent as to the Channel Islands; but in the reign of the sixth Duke of Normandy, this ruler, Robert I. visited Guernsey, and his fleet anchored in a bay on the northern side of the island, which has since that period received the name of "La Baie de l'Ancresse," or Anchorage Bay. This duke is also said to have built two castles in the island, the castle Des Marais and that of Jerbourg. But this is questionable. The castle Des Marais still remains, but in a very dilapidated state; the old walls are covered with ivy, whence it is now commonly called Ivy Castle. That of Jerbourg exists only as a heap of ruins. In the following duke's reign, this island was attacked by a strong piratical force; the inhabitants, in terror and surprise, sent intelligence to the duke, who immediately despatched troops which landed at St. Sampson's harbour. The officer of this relief expedition was soon joined by the monks and many of the people, and

assailing the invaders with great courage, he defeated them with much slaughter, and burned their ships.

The reign of William the Conqueror forms an important epoch in the history of these islands. By the success which attended this Norman duke's invasion of England—a success known in English history as the Conquest, and the determination of which was accomplished at the battle of Hastings—the Channel Islands, together with Normandy, became united to the kingdom of England. This connexion dates so far back as the year 1067; and it is deserving of remark, that, with a brief exception, the union of these islands to our own has never been severed from that period to the present hour. “This,” says the old and pious historian Falle—“this gives the inhabitants of these islands the precedence, as to priority of time, before all others their majesties’ subjects, saving only the purely English; Ireland not being subdued till the reign of Henry II. nor Wales reduced till that of Edward I., and neither the one nor the other perfectly even then. Thus also the accession of Scotland happened not till the beginning of the last century, to say nothing of the plantations abroad, which in comparison are but of yesterday. I speak not this to derogate from the honour of kingdoms or principalities

which do vastly exceed us in expansion of country, and have brought a far greater addition of power to the English empire; but to demonstrate their majesties' ancient and indisputable right over us, and show at the same time how strong our attachment is to England, which has stood the long test of so many ages." It is not to be forgotten, however, that the first connexion of the Channel Islands with our own was that of a part of a conquering state with a vanquished kingdom. Subsequently, the fidelity of the Channel Islands to England was remarkably tried, and was not found wanting under circumstances peculiarly perilous to these little states.

The conquest of England by William produced little or no effect upon the customs and constitution of the Channel Islands. Their constitution, resembling in many respects that of Normandy, could not, of course, be affected by the mere fact of the duke of that country having added another kingdom to his duchy. While the most important changes were introduced into the laws, manners, and language of England, these islands remained, and to this day in many respects remain, the same. The inhabitants were attached to their ancient institutions, and it would neither be the wish nor the interest of the sovereign to operate any change in them. All

the change—at any rate, for a considerable period—that was experienced, was that, instead of having a duke, the inhabitants had now a great and powerful king for their sovereign, or, rather, had both in the same person.

On the death of William the Conqueror, Normandy and England were again disunited, and the Channel Islands formed naturally a part of the latter kingdom, and so for a time lost their connexion with the realm of England. In the reign, however, of Henry I. they were again united to England, together with the Norman crown. This union appears to have been disturbed during the struggle which ensued between Stephen, who had usurped the crown of England, and Henry II. Prior to his succeeding Stephen, Henry was Duke of Normandy and also of the Channel Islands; and at this period Stephen, as King of England, had no royal jurisdiction in the Channel Islands; and their inhabitants held unshaken fidelity to their duke, though then at war with the king of England. During this contest, the island of Guernsey was additionally fortified by the erection of a castle on a little islet close to the harbour of St. Peter Port. This islet was called Cornet, and the castle was subsequently known, as it is now designated, by the title of Castle Cornet. This fortification exists on the

same site to the present hour, and forms one of the defences to the port and shipping of the chief town of this island.

When Henry succeeded the usurper Stephen on the throne of England, the Channel Islands became once more, and now permanently, united to the English crown. The king appointed John, his youngest son, the lord and governor of these islands, and bestowed certain estates in Guernsey upon him. During the reign of Richard this grant was confirmed, and John wielded the authority he had received apparently with great consideration and kindness towards the inhabitants. After the death of Richard, John murdered Arthur, whose claim to the throne was more valid than his own, and so became King of England. This shameful deed excited the anger of every foreign power, and among others of that of France, whose monarch, Philip, only too gladly availed himself of any pretext for the annexation of Normandy to his own dominions. Being cited to appear before Philip, John refused, and was then declared by that monarch to have forfeited all right and title to Normandy; and accordingly the province was reunited to France in 1204. Although, however, Normandy was thus again severed from England, the union between these islands and England was not disturbed. It does not

appear to have been ascertained whether these islands were included in John's forfeiture of the Duchy of Normandy, but their connexion with England was not disturbed by the act of Philip. An attempt was indeed made to excite an insurrection in Guernsey, but the principal inhabitants were unaffected by the seditious efforts of the few priests and others who made this attempt. The island, with the adjoining isles, continued faithful to its sovereign, and former lord and governor, John; the lands of the seditious were seized, and disposed of in such a manner as to reward those who had evinced their attachment to their monarch and to England. Until this period Normandy and these islands were connected by no ordinary links. Their interests, civil and religious, were similar, and their union had been so intimate, that, in the words of an old writer, "they made but one. Briefly, it may be said that in every thing we were as much Norman as the Normans themselves. But now the time was come when all these ties which united us to them, and them to us, must be dissolved, and these islands have nothing more to do with Normandy unless in the way of hostility and enmity." This separation from Normandy unquestionably proved a blessing in after ages to these islands, and this is feelingly expressed

by the pious historian, Falle. This separation, he says, “through the merciful providence of God has turned to our great good. That large and once flourishing province feels now the heavy weight of a French government, and is known to be the most oppressed of any in that kingdom. The same would our miserable fate be at this day were we still attached to it as heretofore, besides our remaining under the darkness of popery,—a greater evil even than the other. Our people,” he adds, “are very sensible of how much better their condition is than that of their neighbours, and behold them with much contempt; who, perhaps, should rather be pitied.”

A singular degree of obscurity prevails over the history of the Channel Islands at this particular juncture. It would appear scarcely probable that Philip, whose darling ambition it was to regain Normandy, and to reannex it to the French crown, would be wholly indifferent to the possession of these islands with which this province had been so closely and intimately connected, and within sight of the shores of which they lay. Yet, whether or not an invasion of the French was actually attempted, is still a matter of uncertainty. It is indeed asserted that in the latter end of King John’s reign some epidemic disease prevailed to such

an extent as materially to weaken the martial force of the Island of Guernsey. Taking advantage of this calamity, the Normans attempted to surprise it, but were repulsed. The attachment of the islanders to the King of England at this critical moment may well excite surprise. When it is considered that at the distance of a few miles was a large, populous, and martial province, full of strong castles, fortified cities, and men accustomed to war, at enmity with the inhabitants of the islands, and, in all probability, eager to join them with itself in allegiance to France, and when the strength and size of the islands is also considered, their loyalty to the English crown, and their courage in resisting and repulsing the invaders, may well excite our admiration.

The islands thus perilously situated, and peculiarly exposed to attacks, owed much of the security in which they remained to those defences which the hand of God has reared around them, and the mere sight of which seems to the present hour to strike terror into the hearts of the sailors whose ships are driven near these frowning coasts. At low water the scene is truly appalling, and the eye in every direction meets with the frowning head of some half sunken rock, hoary with the foam of the angry waters rushing past it. It must not, also, be for-

gotten that both in Guernsey and Jersey strong castles and fortifications existed, which rendered particular parts of the sea-coast impregnable. Other parts were, however, neither defended by nature nor by art, and at these points it is stated that a second attempt was made at invasion on the part of the French. This attempt was equally unsuccessful with the former, and with the exception of a successful enterprise at Guernsey, no footing was obtained in the islands. At Guernsey it is said that through some official negligence Castle Cornet was left without a supply of ammunition. Under these circumstances it was taken by the enemy, but was recovered soon after by the courage of the inhabitants. The date of this attack appears undecided.

In the eyes of King John, small and insignificant a portion of his territory as these islands were, they now assumed a degree of importance, which, considering the extraordinary apathy of that prince to his losses, appears the more remarkable. Possibly the recollection of his having there first wielded the reins of authority caused him to view them with a care which he was little in the habit of exercising. He now thoroughly bestirred himself, and addressed his mind to the task of endeavouring to preserve this only portion of his Norman possessions in

his power. It is said that John visited the islands in person, in order to animate his people, and sustain their courage by his presence among them. He made such arrangements as were necessary for their defence, and established in each island a jurisdiction of his own to do justice between his majesty and his subjects ; the king being confident that in placing this authority in the hands of the islanders, it would be the best security for retaining them under the subjection of the English crown. Such conduct, and at so momentous a crisis in the history and affairs of these islands, has struck the historian conversant with the miserable indolence, injustice, and cruelty of John's character with amazement. It has been, indeed, said that however guilty John was to the Normans and English, he was the best friend the islanders ever possessed, as the founder of their present freedom and happiness.

It may here be remarked, that to the present day the inhabitants are very careful to be understood to have no connexion with France. The mistake commonly made by strangers, in consequence of the French language being that of the peasantry of the islands, in confounding the inhabitants with their neighbours on the opposite coast, is sometimes looked upon as an offence. And indeed their long and faithful

adherence to the English government justly entitles them to be considered, in the words of one particularly jealous of this honour, “not mere English subjects, but Englishmen; and we are proud of the name, yet reckon it a happiness to be suffered to live under our own laws, and enjoy our ancient usages, though it must necessarily keep up a sort of distinction between the strictly English and us.” The French themselves, we are told, did not consider the fact of the peasantry being Norman in all their connexions, and speaking the dialect of that province, to be any link between their country and the Channel Isles, and were accustomed, after their separation, to call them the “*English Isles*.”

The French, however, still cherished the hope of reconnecting these islands with their own country, and in the reign of Edward I. made a fresh assault upon them. This invasion was not more successful than their previous attempts, and after a sharp and hardly contested struggle, the invaders withdrew. The islanders lost a good many men, the widows and children of whom were specially provided for afterwards by a royal decree. During the reign of Edward III., and in the contest that ensued between that monarch and Philip de Valois of France, these islands became again

the scene of a fierce and arduous struggle between the French and the inhabitants. By means of a powerful fleet the French committed many aggressions on the English coast; and after sacking and plundering Southampton, this formidable armament directed its course towards these little islands. After a severe resistance, they obtained possession of Guernsey, and retained it for upwards of a year. Even the strong fortress Castle Cornet, which had been considered impregnable, was obliged to capitulate, and fell into the hands of the French. The interior of Jersey, however, remained still unsubdued. The island was subsequently evacuated by the enemy, and restored to the English, by a truce between Philip and Edward. Notwithstanding, however, the several trustees agreed upon at different times between the contending nations, they were so ill observed that they existed only in the name, and war may be said to have been still carried on. A definitive treaty of peace was, however, finally entered into between Edward III. and the King of France, by which he renounced all claim to the province of Normandy, but reserved to himself the Channel Islands.

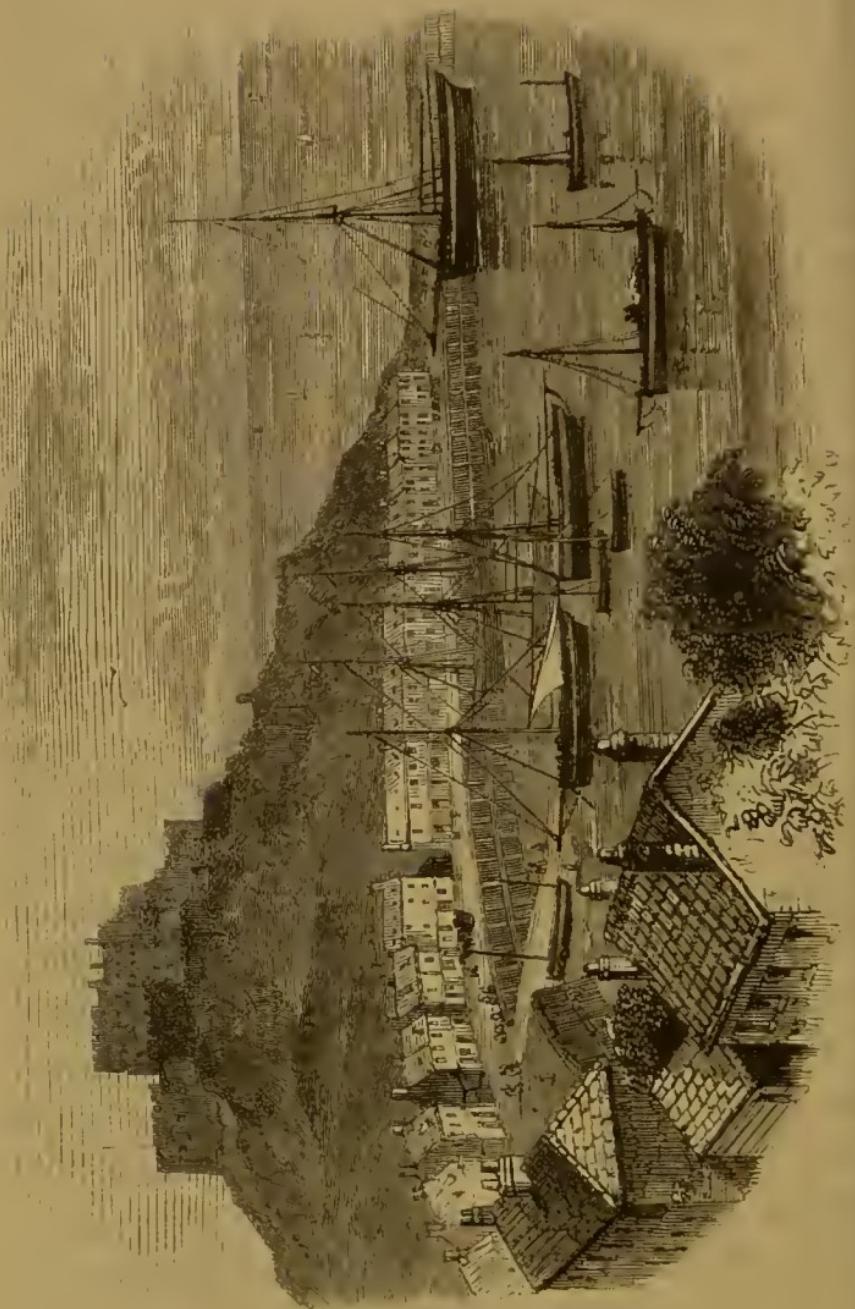
When Charles V. succeeded to the throne of France, these islands became again the scene of a most bloody and obstinate struggle. A

pretended Welsh prince, of the name of Yvans, or Evans, a refugee in France, under orders from Charles, set forth from Harfleur with four thousand fighting men, and landed in Guernsey. This invasion is still commemorated in popular tradition under the title of “*La descente des Saragousais.*” The first encounter took place at Vazon Bay, situated on the north-western coast of this island. The invaders far outnumbered the opposing force, and after a sanguinary resistance the Guernseymen retreated, leaving four hundred of their number, nearly half of the resisting force, dead upon the shores. On the ground on which the new town is now erected, the retreaters made a stand, and the spot is still known as *La Bataille*. The governor of the island fortified himself in Castle Cornet, and repulsed all the attacks of the enemy to dislodge him. Charles V. despairing of success, and having perhaps little calculated on so obstinate a resistance, commanded Yvans to withdraw, and the island was once more in the peaceful occupation of its inhabitants.

The Constable of France is related to have made a somewhat similar attack upon Jersey. He came suddenly to the island at the head of an army of ten thousand men ; among his staff were the Duke de Bourbon and the flower of the French chivalry. The invaders encamped

before Mont Orgueil Castle. No resistance to the landing of this overpowering force appears to have been made, but the besieged manfully opposed the attempts of the enemy against the castle. The besiegers made little or no progress in their attempts on this strong fortress, and at length grew weary of the protracted siege, coming to a sort of honourable composition with the besieged, that the latter would capitulate, if within a certain period relief did not appear. The expected aid from England arriving within the stated period, the castle was relieved, and the Constable retired to France.

In the reign of Richard II. the Channel Islands again attracted the unfavourable notice of France, and a confederacy was formed between the kings of France and Castile, the object of which was the destruction of these islands, together with the Isle of Wight. The intention was to burn the houses to the ground, to uproot the trees, and so thoroughly to devastate these islands as to render them uninhabitable for the future. These wicked intentions appear to have been frustrated, for no such attempt was made. In the reign of Henry VI. of England, the French were more successful; but on this occasion more by art than by force. An agreement was made between Henry's



queen and a powerful Norman noble, that if the latter would assist this monarch's cause with a speedy reinforcement, the Channel Islands should be his reward. The Norman, giving his ready assent, brought over two thousand men into England to the relief of King Henry's cause. Meanwhile the governor of Mont Orgueil Castle, in Jersey, had secret orders to deliver up that fortress. A Norman gentleman, appointed by the noble who had gone to the succour of Henry, took over a considerable force to the island, and was by consent admitted by night into the castle, the commander being taken in bed, in order to give the whole matter the air of a surprise. The Jerseymen were, however, soon enlightened, and became highly enraged at the base manner in which they had been sold to this Norman. He remained in possession of the island about six years, not being able, however, to reduce more than one-half of the inhabitants to allegiance to himself. A brave islander having secured a strong fortress on the western coast, and supported by a large number of the inhabitants, resisted during the whole of this period the attempts of the invaders to subjugate the remaining parts of the island. Relief at length appeared. An English fleet proceeded to Jersey, and blockaded the French by

sea, while the natives invested them by land. The French now became extremely anxious to communicate with Normandy, and, according to the historian Falle, adopted the following ludicrous stratagem in order to effect it. They imagined that possibly a small boat might pass undiscovered through the fleet, under favour of the darkness of night; this being their last resource, they resolved to make the attempt. Though they required but one boat, they caused two to be built; one openly on the ramparts, in view of the besiegers; the other near the former, but in a concealed position. The workmen were ordered so to time their blows, and strike nearly together upon the two boats, that from the camp without no sound might be heard but what would be supposed to come from the boat on the rampart. By this artifice the concealed boat was completed while the workmen were still apparently busied about the other. The besiegers might have remained in ignorance of this artifice, had not a Jerseyman, who had been constrained to work at the boats against his will, shot an arrow, to which a letter was attached, and which revealed the whole scheme, into the camp of the besiegers. The fleet were thus put on the alert, and when the boat was launched, it was quickly intercepted. The French then, in

despair, are said to have surrendered. It must be acknowledged that this anecdote wears more of the character of fiction than of fact. Orgueil Castle was recaptured, and the French expelled the island.

In the reign of Edward IV. Guernsey received the privilege of neutrality. It had been noticed how exposed these islands were in time of war, occupying, as they did, a position so close to a great power, with which England was not unfrequently at variance; and apparently with a view to its security, and to the preservation of its inhabitants from the misfortunes always attending the outbreak of war, this privilege was conceded.

In the intervening period between the reign of this last monarch and that of Edward VI. few events of interest relating to these islands are on historical record. In the early part of Edward VI.'s reign, the islands again came to their remembrance, and the French resolved on a desperate attempt at their surprise and capture. Having fitted out a naval squadron with a strong force, they came down upon and without resistance captured the little island of Sark, lying over against Guernsey, and distant from it about nine miles. This island appears to have been almost deserted at the time: its former principal occupants, having been monks

and friars, had retired to France soon after the Reformation. Having fortified this singular and remarkably preeipitous island at the few points where it was aecessible to an invader, they commeneed a system of incursions upon the shipping, by which they hoped ultimately to bring Guernsey to submission. Leaving a strong guard at Sark, they fitted out an expedition, whieh, sailing by night, reached the harbour of St. Peter Port in two hours. There they set upon the ships, and the men, being asleep and unsuspeeting, were little able to offer any resistance, and for a time the success of their expedition appeared certain. The whole town soon beeame alarmed, and a strong body of troops was got down to the harbour. The artillery from Castle Cornet also speedily opened fire on the enemy, and great loss on his side soon took placee. The invaders, perceiving that it would only expose them to utter annihilation to persevere in their attempt, retired, and sought refuge in the rocky island from whence they set forth. A similar expedition was equipped against Jersey, and landing in Boulay Bay, an attempt was made to enter the island. The population, however, were quickly under arms, and the islanders, assembling on the summits of the tall cliffs which environ this bay, so galled and annoyed the

forces of the enemy below, that their progress was arrested, and on coming to closer eonfliet, they were repulsed and driven baek to their ships. The loss of the Frenel in these expeditious amounted to not less than a thousand men; and it is said that the King of France was so bitterly disappointed at the failure, that he forbade the subjeet being ever mentioned again in his presenee. Sark for a time still remained in the oecupation of the Frenel.

The reeovery of this island was aecomplished under eireumstances so curious and interesting, as perhaps to have no historical parallel. Sir Walter Raleigh, who was for some time governor of Jersey, gives a full aeeount of it. He says, this island, surprised by the Frenel, could never have been reeovered again by strong hand, having cattle and corn enough upon the plaee to feed as many men as will serve to defend it, and being every way so inaeeeessible, that it might be “held against the Grand Turk himself.” In the Edinburgh Journal, No. 136, New Series, the subjeet is treated in a familiar style, and we shall make sueh extraets from the paper in which the event is notieed, as may eonvey a lively aeeount of the remarkable recapture of this island.

“ A single ship anchored before Sark, having all the appearance of a merchant vessel, whiclh

excited an unusual commotion and surprise among the vigilant inhabitants of the island: her sails were hauled down, and preparations were made on board for a temporary stay. There was something rather alarming in all this; but it was carefully remarked by the look-out on shore, that no weapon of offence was visible on deck, or in the hands of the seamen. There were all sorts of conjectures as to the object of the arrival, and the most sedulous preparations were made by the French for a vigorous defence in the event of any attack upon the island. Nothing, however, appeared to be further from the minds of the occupants of the ship. A white flag waved from her top, and every demonstration of a pacific nature was exhibited. But the French were not without suspicions of treachery; and when they beheld a boat leave the side of the vessel with a white flag at her bow, and containing only a few sailors, and make for the rocks, which formed the only landing-place, they crowded to meet them with loaded harquebusses and other weapons of offence. The sailors, however, making parade of their defenceless condition, were permitted to approach within ear-shot of the rocks, and then explained the object of their visit. A comrade had died on board a day or two previously. Their vessel was out-

ward bound ; they might not, within a considerable period, touch at any part where there was consecrated ground, and they prayed permission to inter his remains in the little chapel erected on the island. No weapon should be brought on shore, and, in return for the permission, a present would be made of *such commodities* as they had on board ; their only object was, that the bones of their departed friend might be committed, not to the mercy of the waves, but to a peaceful rest in the holy chapel. Accessible through their religious feelings to this demand, the French were nevertheless somewhat suspicious ; but the seamen acted their parts with so much simple earnestness, and they had already given such a striking evidence of the perfect harmlessness of their intentions, in voluntarily throwing themselves into the power of the others, that permission was at length given, upon the express condition, however, that not so much as a ‘poeket-knife’ would be allowed to be brought on shore—a condition which obtained the readiest assent from the men, who returned to the ship, concealing their exultation, until beyond the reach of detection, at the partial success of their adventure.

“On shipboard that night a goodly-sized coffin, which, in anticipation of the mournful event, had been prepared, was filled, not with the cold

remains of their comrade—an individual of fictitious origin altogether—but with a large number of swords, targets, and harquebusses, carefully packed, to provide against any risk of detection by their rattle, over which the coffin lid was secured, but in such a manner as to admit of its ready removal. The next day saw the boat leave the ship with a few more men than on the previous occasion, containing in her centre the coffin, covered by a flag, and having in its interior the pseudo corpse. It was met by the French at the landing-place—nothing more than a few rude steps cut into the face of the cliff; and each man was permitted to leave the boat only after undergoing a rigid search. All suspicion was at rest with the French, who proceeded to give assistance to the removal of the coffin. To the invaders this was a particularly anxious time, as it was absolutely necessary that none of the islanders should have any idea of its weight. Long ropes had been provided, as, from the precipitous nature of the place, it was requisite to draw the coffin up the rocks; and the seamen, taking great care that none of the French should lend a hand to the work, with hearts, as may well be conjectured, full of the most painful excitement, eventually, after the greatest difficulty, and by an amount of exertion the

more painful, from the necessity of its concealment, succeeded in effecting its safe landing upon the summit of the rock. The men drew a long breath: one of the most formidable of their difficulties had been overcome, and they began to make arrangements for the completion of the funeral ceremony. The French sent a body of men to secure the boat, while the rest accompanied their visitors, who shouldered the coffin with a solemnity becoming the supposed character of the occasion, and with much of the semblance of unfeigned sorrow, carried the remains towards the burial-place.

Those of the French who had secured the boat then pulled toward the ship in anticipation of the promised commodities, and, without a dream of treachery, on arriving at the vessel, clambered up her sides. As soon as they touched her deck, a number of seamen rushed upon them, disarmed them without a blow, and bound them together and to the deck by heavy manacles. A party then entered the boat, and rowed hard for shore, to the rescue and assistance of their companions engaged in the funeral obsequies.

“These, being at the head of the procession, proceeded at a steady pace until within a short distance of the chapel, where they quickened

their steps. All had entered before the arrival of the French, who had followed them. The coffin was set down, the ehapel door closed and fastened, the coffin lid was rapidly removed, its contents drawn forth, the men arming as silently and swiftly as possible, and by the time the French had arrived at the ehapel, there was a eompany of men armed to the teeth ready to salute them. The chapel door was unfastened ; and the French, to their horror and amazement, received their first intimation of the real obejet of the mourners in a furious attaek, before which they fell like sheep.

“ The suddenness of the onset took away all power from the men, and they fled with the wildest preeipitation from before the murderous weapons of thier assailants. A few, of bolder hearts, made a short defence, but were swept down by the swords of their enemies. The rest flew hither and thither ; and, rendered almost senseless by surprise, some plunged with mad haste into the yawning abysses around the island. Others, more wisely pereeiving all efforts at defenee and eseape to be alike in vain, surrendered themselves to their vietors. In a word, the island was depopulated, and the Channel Islands ridded of one of the most serious and mischievous annoyanees to whieh their trade and security had ever been subject.

The current of historical events connected with the Channel Islands runs more smoothly during the reign of Elizabeth than probably at any other period, and indeed this and the following reign are sometimes called the Golden Age of the Channel Islands. This quietude, however, refers chiefly to external sources of alarm, for internal dissensions were very numerous and harassing. During Elizabeth's reign Castle Cornet was fortified, and in Jersey the beautiful castle at the entrance of the harbour of St. Helier's, since called Elizabeth Castle, was founded. In order to prevent the capture of Sark by the French, it was made the subject of a royal grant to Philip de Carteret, that he might let it out in forty different tenements, in order that there might be at least as many men to resist any sudden attack. In Guernsey Elizabeth endowed a grammar-school, which formed the origin of the present large institution called Elizabeth College.

Events of a more exciting character arose in the reign of the unfortunate Charles I. In the civil war which rent the parent country, and distracted the minds of all classes of persons, Guernsey and Jersey, singularly enough, took opposite sides, Guernsey adhering to the parliament, and Jersey to the king. War existing between England and France, the king of the

latter country determined upon an expedition for the recovery of the Channel Islands, and their re-annexation to his crown. This design was not, however, accomplished, and a small armament from England was sent over to prepare the islands in the event of an attack. In Guernsey the deputy-governor remained faithful to the king, and obtaining possession of Castle Cornet, terrified the inhabitants of St. Peter Port, by firing cannon upon the town. The governor of Jersey fitted out about ten armed vessels, and these, cruising about against all ships carrying a parliamentary commission, did an infinite amount of damage to the mercantile marine, and Channel trade. During this unhappy reign the two islands were in continual commotion, from the strife of the contending parties, some of whom were found in each island, as obstinately attached to the one cause, as the majority to the other. Prince Charles, pressed hard by the Parliamentarians, fled to the West of England, and being in danger of being pent up at the Land's End, he was compelled to seek shelter by passing over to one of the Scilly islands. From hence he fled to Jersey, where a safe asylum and a cordial welcome awaited the fugitive. After a short stay in this island he went over to France.

It must not be forgotten that for ten years of

this period Castle Cornet, incredible as it may appear, held out and appeared invincible. This fortress was nevertheless easily accessible from the main land, and probably might have been reduced in a short time by a commander of sufficient energy, and provided with heavy artillery. With reference to this protracted siege, of which history furnishes few parallels, an old historian thus expresses himself :—“ In the time of the Grand Rebellion, Castle Cornet held out a tedious long siege, yet was never taken, although assaulted with the utmost vigour two several times by Oliver’s forces, when the soldiers in it were most of them sick with the scurvy. But after all attempts to have taken it proved ineffectual, and in which great numbers were slain, the gallant cavaliers who defended this impregnable fortress withstood the enemy with the bravest intrepidity, and underwent many hardships, until their provisions were wholly spent, when they were forced to surrender upon honourable terms, not before they had obtained the sum of 1,500*l.* sterling, to secure themselves, when marched out, from further distress by Cromwell’s party.” The castle yielded to a formidable fleet of eighty sail, under command of the celebrated Blake. Shortly afterwards, Jersey was also compelled to acknowledge its allegiance to the parliament; an attempted resistance was for a

short time offered by the governor within the strong fortress, Elizabeth Castle, but at length it also capitulated. During the period when Castle Cornet was in a state of siege, the cannon did frequent damage to the town of St. Peter Port, and a singular anecdote is related which seems to show that the artillery-men were excellent marksmen. A gentleman was seen walking in front of the court-house, and became an object for the marksmen at the castle, of which they speedily availed themselves. A cannon was fired, and in a few seconds this unhappy gentleman was struck by the ball and killed. Unfortunately, he is said to have been a zealous royalist, and was consequently murdered by the very persons whose cause he espoused for his own.

During the whole period of this painful contest between the royalists and republicans, the islanders suffered greatly. Commerce was entirely at an end, the towns were deserted, and the country was uncultivated. Perhaps this is best set forth in a declaration drawn up by the inhabitants themselves, and submitted to Oliver Cromwell:—“The inhabitants during the heat and danger of war were in continual fears, services, and watchings, twice a-week, sometimes thrice. They had frequent alarms from Jersey, from Castle Cornet, from Normandy,

from Brittany, and from the king's ships. They were always in arms. They constructed fortifications, and several other works for their own defence, and were at their own charges for reducing and keeping Sark. They were kept under like slaves, appointed, threatened, beaten, their orchards were robbed, their trees cut down, and their sheep stolen."

On the restoration of Charles II. to the throne, the inhabitants of Jersey experienced the reward of their previous adherence to the royal cause in the marked approbation of the king, who had twice found the island a safe retreat



CASTLE CORNET.

for himself. The inhabitants of Guernsey immediately renounced their former opinions, and from having been resolute parliamentarians, now became decided royalists.

At a period subsequent to these events, Castle Cornet became again an object of most painful attention in consequence of an awful calamity which befell that fortress during the governorship of Lord Hatton, the second of that name. The event is sufficiently remarkable to merit one extracting an account of it which is given by Dicey in his History of the Island of Guernsey:—"On the night of Sunday, December 29, 1672, the magazine of this castle was blown up by lightning. The night was very stormy and tempestuous, and the wind blew hard at south-west, to which aspect the door of the magazine exactly fronted, and the thunderbolt which caused this dreadful calamity, was 'heard to come circling, or serpentineing over the platform from the south-west. In an instant of time, not only the whole magazine was blown up into the air, but also all the houses and lodgings of the castle.' The residence of the governor, together with the other buildings, were in a few minutes reduced to a confused heap of stones, and several houses lay buried in the ruins. In the upper part of the castle Lady Hatton, mother of the governor, was killed by the fall of the ceiling of her apartment. The lady of the governor, terrified at the extraordinary fury of the tempest, had previously insisted on being removed to the

nursery, where she and her attendant joined in prayer. In a few minutes the wall of the room fell upon them, and both were killed. A nurse in the same room was also killed; yet an infant daughter of the governor's, who was lying in her arms, escaped without the least injury, a silver eup which she had held in her hand as a plaything, having been crushed forcibly by one of the falling masses, which had providentially missed her. In the cradle lay a little babe, the cradle was partly filled with fallen rubbish, but the infant was not in the least hurt. Many other persons were found crushed by the fallen masses.

Some of the escapes from the effects of this distressing calamity were almost miraculous. The governor himself was fast asleep at the moment when the explosion occurred. He was actually carried away in his bed, and deposited upon the battlement of a wall whieh was battered by the sea, and yet remained asleep. It is said that he was first awoke to a sense of his dreadful ealamities by a shower of hail falling on his face. Very possibly, he received a slight concussion in his fall, which rendered him insensible for a short time, as it is wholly inconceivable that he should naturally have remained asleep under such eirumstances. The house in whieh the governor

was sleeping was razed to the ground. Several other persons had remarkable escapes, but none so singular as this. This dreadful catastrophe filled the inhabitants of Guernsey with sorrow and dismay, and a public fast was ordered by the states.

Toward the beginning of 1678, Guernsey was again threatened with a French invasion. Relief from England was sought for and readily obtained, and it is deserving of notice, that on this occasion the troops paid for their accommodation. On all previous occasions, the soldiers had obtained their provisions either by force, or at any rate, without offering any remuneration for them to the inhabitants. The threatened attack was not made, and the tranquillity of the island was restored to it again. The reign of James II., whose Roman Catholic sentiments are well known, was marked by the attempted introduction of that apostasy into the Channel Islands. At Guernsey and Jersey Roman Catholic governors were appointed, and the garrison consisted chiefly of soldiers of the same persuasion. The inhabitants, who have always maintained a high character for their adhesion to the principles of the Reformation, were highly indignant at this attempt. In Guernsey a conspiracy was formed, which, immediately on the landing of the Prince of

Orange at Torbay, came into active force, and in a short time the Roman Catholic soldiers and officers were disarmed. At this period the French court, favouring the cause of the Stuarts, again meditated the invasion of these islands. A powerful fleet under the command of Admiral Tourville was in the Channel. At this critical juncture a gentleman of Guernsey passed either through or within sight of the French fleet, and promptly conveyed to Admiral Russell, who was lying at St. Helier's, the important intelligence of the position of the French admiral. The famous naval battle of La Hogue ensued, in which the French fleet was almost entirely destroyed, and by means of which the security of the Channel trade and of the islands was obtained. It is important to remark, that during the reign of William and Mary, Guernsey was deprived of its charter of neutrality, apparently with a view to cut off all communication between James II. then in exile in France, and his adherents in England.

The continental wars in which the French were engaged during the reigns of William III. Anne, George I. and George II., directed the attention of the French for a time from the Channel Islands, and it does not appear that any events of importance disturbed the internal peace of the islands during this period. Party

spirit, at all times violent, occasionally disturbed the states; but the matters of dispute have only a local, personal interest, and do not justify attention. During the reign of George II. many events of minor importance mark the history of the islands, and legislative amendments and enactments of various kinds were made. The course of events continued undisturbed until 1755, during the seven years' war with France. At this period great preparations were made at Granville and St. Malo for the invasion of these islands. In order to avoid the danger thus threatened, Howe was despatched with a small fleet, in order to strike a blow upon a part of the French coast, which might lead to the abandonment of the project. The expedition under this gallant seaman proved highly successful; the French abandoned their design, and withdrew their troops to Brest. Two years later, a similar invasion was threatened; an English fleet under Lord Anson set sail in order again to anticipate their design, and a destructive attack was made upon St. Malo.

During the early part of the reign of George III. the affairs of the Channel Islands were undisturbed by any outward cause of alarm; but on the breaking out of the American war, the French, in order to embarrass England, and to withdraw a part of her naval force to the

defence of these islands, formed a plan for the invasion of Jersey. An army of four or five thousand men appeared in sight of the island in about fifty flat-bottomed boats, protected by five frigates and several armed cutters. A debarkation was attempted at St. Ouen's Bay in that island, but experienced so vigorous a resistance as to cause them to relinquish the enterprise. A second attempt was then planned, but before it could be carried into effect, the fleet destined to cover the invasion was attacked by a British squadron, and nearly annihilated.

The last attempt made by the French to obtain possession of the Channel Islands was one of a highly singular and dangerous character. On the night of Christmas, 1780, a fire was seen blazing between Rosel and La Crepe, two points on the north-eastern coast of Jersey. It was answered by another fire on the coast of France. On the following morning a French officer, the Baron de Rullecourt, embarked at Grandeville, in order to invade the island of Jersey. The weather, however, becoming tempestuous, his final departure did not take place until Jan. 5, 1781; he reached Jersey at eleven at night, having been piloted by a traitorous Jerseyman, well acquainted with the coast. The troops disembarked with much loss, in

consequence of the dangerous part of the coast to which the tide had carried the expedition. They proceeded to St. Heliers without any alarm of their presence having been given, and filled the market-place, to the inconceivable terror and surprise of the inhabitants on the following morning. The lieutenant-governor was taken prisoner in bed. By barbarous threats he was compelled to sign a capitulation, and, greatly to his discredit, he ordered his troops to surrender. This order was disregarded by Pierson, a mere boy, and he bravely led the attack on the invaders, and for a time Rullecourt appeared to be entirely successful. The whole island was alarmed; several regiments, then quartered at different stations, marched toward the town, and the fortunes of the invaders appeared less promising than at first they seemed. At length, an impetuous attack was made upon the invaders by the island forces, under the command of a brave young officer, Major Pierson. The French troops gave way, and were driven from every street toward the market-place. Rullecourt, when the attack commenced in this spot, seized the lieutenant-governor by the arm, and declaring that he should share his own fate, led him out of the court-house under a shower of bullets, exposed to which the unfortunate prisoner was compelled to stand, by the

side of Rullecourt. The latter at length dropped, after having received three or four mortal wounds. It appears almost miraculous that his prisoner escaped without injury, although one or two bullets passed through his hat. Unfortunately, at the first onset the brave Major Pierson fell, shot through the heart. A monument, commemorating this invasion and the bravery of this young officer, was subsequently raised at the expense of the inhabitants of the island. Never was any defeat more signal and complete: the whole French party that had landed, probably not fewer than seven hundred men, were killed or taken prisoners. Thus terminated the last attempt of the French at the recovery of one of a group of islands, placed by nature almost within her grasp, yet for so long a period successfully resisting every attempt on the part of France at its recovery. Guernsey was not molested on this occasion, and lying at a little greater distance from the French coast, was less liable to attacks of this kind.

The small island of Alderney figures but little in the annals of history. It became, however, in the summer of 1781, the object of an attack by a French expedition despatched from Cherbourg, with two hundred soldiers. Under cover of the night, the ships came to an anchor within musket-shot of a guard-house, where

they were perceived about two o'clock in the morning, it being at that time moonlight. The French were busy in an attempt to land. The guard was composed only of four men, who, perceiving the object of the invaders, immediately opened a fire upon them, which cut down several on board the ships. A large English privateer was lying at anchor in the Alderney roads, and her captain, immediately upon hearing the guns from the battery, beat to arms. The French imagined the sound to arise from a large body of militia, and abandoning the attempt at landing, made all sail as soon as it was day, and directed their course to Cherbourg, pursued for a short distance by the privateer. Thus, by the energy of four men, this important island was preserved from falling into the hands of the enemy.

Since this period, the Channel Islands, though experiencing at different times both menace and alarm, have not been subject to any actual assault. Napoleon, in the boastful language he was accustomed to use, when meditating his invasion of England, called the Channel Islands stepping-stones to that kingdom. But the project and the author of it experienced the same fortune, and no attempt was made to use the islands in the manner he had contemplated.

If undisturbed by foreign invasion, Guernsey had her share of disquietude in a year or two after the date of the last attaek. A most daring mutiny broke out among some of the military, but was ultimately suppressed by the energy of the officers and fidelity of the 18th regiment. During the revolutionary war against France, one of the most remarkable examples of sucessful seamanship, accomplished under eircumstances of a most peeuliar character, has always been a prominent point with the annalists of these islands. The Crescent frigate, under the command of Captain Sir James Saumarez, aeeompanied by two others, was chased by a Freneh squadron of vastly superior foree. The Eurydiee, being a bad sailer, was ordered to make the best of her way to Guernsey, while the Crescent and Druid kept under easy sail, oecasionally en- gaging the Freneh ships. The Eurydice having gained some distanee a-head, the Crescent and Druid made all sail. The enemy gained rapidly upon them, and no possibility of escape pre- sented itself but by piloting the ships through a part of the eoast beset with sunken rocks, and where the tidal currents were strong. There was on board Captain Saumarez's ship a king's pilot, who undertook this dangerous task. This man suceeded in earrying the ships in

safety through a series of intricate passages where no king's ship had ever before ventured; and as they sailed along the perilous coast, large numbers of the islanders assembled to witness this extraordinary feat. So near did they sail to the shore, that Captain Saumarez could actually see his own home, while in his rear was a powerful enemy, and a prospect of capture and imprisonment in a French prison.

On the renewal of hostilities between Great Britain and France, in 1803, the Channel Islands were put in a complete state of defence. Batteries were erected in the bays, and the coasts were protected by fortifications of various kinds. The governor of the Island of Guernsey at that period was General Doyle. By his zealous exertions a large tract of land which had been overflowed by the sea, in the Vale parish, was recovered. This land proved ultimately very fertile, and corn now waves where the billows of the Atlantic once rolled without control. The produce of its sale was applied to the formation of the excellent roads which in every direction run through the island. These roads are interesting, since they exhibit one of the earlier specimens of the method of road making called macadamization. The stones employed were not to be larger than a walnut.

in size. Sir John Doyle subsequently left the island, but returning in 1826, he had the gratification of seeing the Doyle monument at Jerbourg, which had been erected during his absence in grateful remembrance of his past services. On the proclamation of peace the towns of St. Helier's and St. Aubin's, in the Island of Jersey, were generally illuminated, and a day of public thanksgiving was observed.

The most important event in the recent history of these islands was the unexpected visit of her present Majesty, accompanied by Prince Albert. About seven o'clock on Sunday evening, August 23, 1846, the royal squadron was seen off St. Martin's Point, Guernsey, and in about half-an-hour came to anchor in the roads. The news of her Majesty's approach penetrated even into the churches and chapels, at that time filled with their respective congregations. As soon as Divine Service was concluded, large crowds of spectators thronged every part of the street, and many embarked in boats. As it became dark, the houses from one extremity of the town to the other were illuminated, and fireworks were let off in different directions till a late hour on an evening that appeared to have little accord with the peaceful repose of the Sabbath. The islanders were highly enthu-

siastic, and many remained in the streets the night through. A number of hasty preparations were made for ornamenting the town with flowers, and on the following morning at the earliest hour various arrangements were made to weleome her Majesty to the island. Perhaps the most tasteful of these eonsisted in the arrangement of a number of young ladies belonging to the highest families of the island, dressed in white, and earrying baskets of beautiful flowers, who were stationed immediately adjoining the landing-plaee. On the arrival of her Majesty, flowers were strewn in her path, and the national anthem was sung. The enthusiasm beeame unbounded as the Queen, aecompanied by her royal eonsort, proeceeded along the slip, and entered the royal earriage. Her Majesty, the Prince, and suite, were conducted along the prineipal street of the town, greeted at every step with the most enthusiastie cheers, and proceeded to Fort George ; after inspecting whieh, the royal party returned through the town, and re-embarked. A little after eleven o'clock the royal squadron was on its way to Ports-mouth.

The inhabitants of Jersey received notice that her Majesty would in a short time visit that island also ; and opportunity was thus

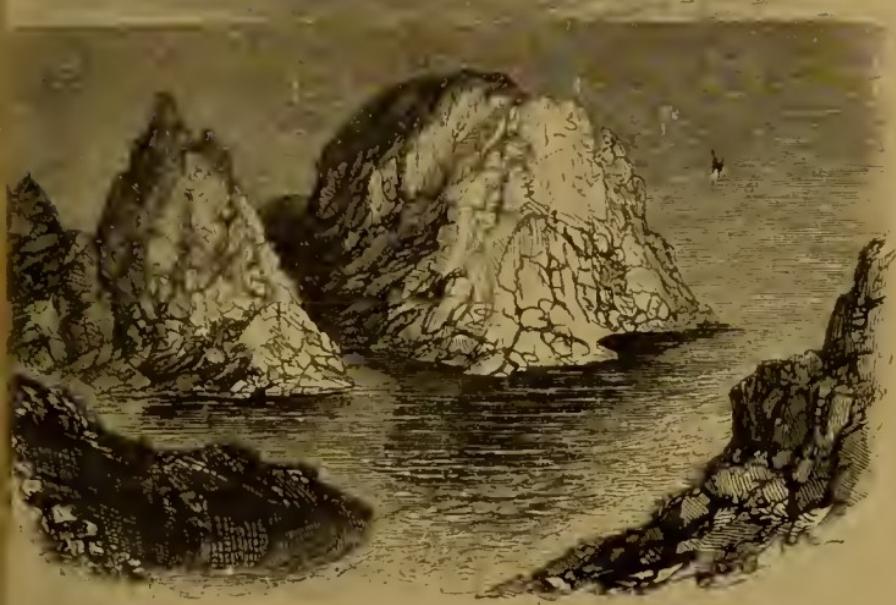
given for making the most extensive preparations for her reception. Some splendid pieces of ornamental architecture in the form of triumphal arches were made ready, on which appropriate mottoes were inscribed. About



ST. HELIER'S HARBOUR, JERSEY.

forty of these arches were erected in various parts of the island. On Thursday, September 3d, the royal squadron anchored in the harbour of St. Helier's, Jersey. At night the town and its environs were illuminated in every direction; rockets were discharged, and large bonfires lighted. A magnificent reception was

given to her Majesty on her landing the following morning. Flowers were strewed along her Majesty's path, and an elegant pavilion was provided for her accommodation during the reception of the addresses. Her Majesty, the royal consort, and suite, were then conducted through the town to Mont Orgueil Castle. After a short stay, her Majesty and suite re-embarked, expressing themselves highly delighted with the beautiful scenery of the two islands. It is worthy of remark, that since the time of King John, no English monarch had visited these islands up to the period of her Majesty's auspicious visit. This event naturally closes our summary of the history of the Channel Islands.



MOULIN HUET.

CHAPTER II.

THE ROCKS.

FROM the deck of the Southampton mail steamer, through the mists of a summer morning, the traveller commonly catches the first glimpse of the group of islands we are about about to describe. Through the haze which frequently envelopes the surface of the sea, the frowning summits of the formidable rocks called the Caskets appear. As now pursued, the journey to the Channel Islands is commonly

made by a mail packet, which leaves Southampton at a quarter to twelve at night, and reaches Guernsey at times varying with the state of the weather, but most commonly at about nine o'clock on the following morning. The rocks in question lying in the direct route to the latter island, are generally approached rather closely ; and, when enwrapped with mist, and consequently only indistinctly seen, they communicate an impression akin to that of awe to the mind ; and the idea of coming in contact with such fearful obstacles seldom fails to suggest itself. The early hour in the morning at which these rocks are first seen also combines to convey a feeling of vague alarm ; and though in the present state of navigation such fears may be groundless, history records, with mournful frequency, the losses of life and ships upon these wild and gloomy rocks, at a period when there existed no sea-marks upon them, and when the power of steam was less employed than it is at present in marine navigation. As the sun rises and dispels the morning obscurities, and as the steamer glides swiftly past the rocks, their real form and characters become evident ; but it is difficult even then to survey the Caskets without a shudder ; and as they sink into the distance, leaving only the white summits of the artificial structures reared upon them, the eye

gladly turns from them to the more pleasing prospect of Guernsey, and the group of isles which present themselves to view.

The Caskets are in reality a group of desolate and barren rocks, on which scarcely a lichen can grow, and which long remained a terror to mariners, and the abode only of a few sea-fowl. Their appearance is peculiarly stern and rugged. The rocks belong to the granitic series, and project above the waters in forms the most uncouth. Though destitute of a regular stratified character, they have an inclined strike which renders their appearance singularly fantastic, since great masses of them lean over the surging waves, as though ready at any moment to become buried in the tumultuous tide which sweeps around them. They stand out of the water in forms so abrupt and rugged as to leave no shore; and, although about a mile in circumference, there does not exist a single spot where sand or pebbles can accumulate. There is therefore no natural beach for the accommodation of boats, and landing can only be effected, and that alone in calm weather, by stepping from a boat on to the rock itself. The outline, below water, of these rocks must be as abrupt and perpendicular in its character as that above the waves, for the lead drops to from twenty to five-and-twenty fathoms down on all

sides of them. Thus, were such a group of rocks seen from the base to the summit, it would appear in the form of a tall mass of rocks inclined probably in one direction, but on the others having perpendicular sides. The effect of such a mass standing up from the sea-bottom, upon the vast body of water impelled by the Atlantic wave along the channel, may be readily conceived. In consequence of the perpendicularity of this rocky sea-tower, vessels of the greatest burden may pass so closely as almost to scrape the sides of the rock, without fear of touching the bottom. It has been said that a line-of-battle ship may pass safely within an oar's length of the rock. It is impossible, however, to view the velocity with which the tide sweeps round these rocks without a suspicion that beneath the circling green waters some sunken masses must lie hid ; and the broken aspect of the whole group appears to confirm this idea. For at various distances from the main mass of rock, the heads of rocks, half hidden, half exposed, occasionally appear rising over the waves. The tide runs through the channels left between the main rock forming the Caskets, and the rocks which stud the waters in its vicinity, with such violence as to render it comparable to a great river ; and under the shelter of the rocks a number of mimic whirlpools are produced. The

course taken by the steamers lies often between these rocks and the Caskets ; and although in reality void of danger, timid persons can scarcely feel at ease until the vessel has stemmed her way through the current, and enjoys sea room again.

Passing thus closely these formidable rocks, we were enabled to obtain an excellent view of the form and outlines of them ; and the accompanying cut conveys a correct idea as to these particulars. On one side the Caskets are so formed as to produce a sort of natural dock. A projecting rampart of rock resists the immense volume of water poured past this rocky island ; and by the shelter thus created a small harbour of refuge is formed, where a frigate might lie, and, perhaps, even in safety, weather out a storm, if her anchor and cables were to be relied on. In consequence, however, of the tremendous risk which would arise on their failing, it may be imagined that few ships are likely to be entrusted to the tender mercies of the elements and rocks at the Caskets. This harbour is, however, convenient, in order to facilitate communication with Alderney. Steps are consequently cut in the rock, in order to form a landing-place, from the boats which occasionally visit the Caskets. They are seldom or perhaps never visited by the traveller. The access is

peculiarly difficult, and depends upon so many contingencies of wind and tide, that the intercourse of the neighbouring island of Alderney is rendered very occasional, and is generally confined to visits of necessity or authority. Only in calm weather is it safe for boats to attempt a landing, as the least swell, superadded to the powerful tidal currents, would imperil the safety of all on board.

For a considerable period these dangerous rocks were totally undistinguished by any mark for the guidance or warning of the navigator. Yet fogs are of frequent occurrence ; and, well known though the passage is, even in our own day—and distinguished as these rocks are by the peculiar form and arrangement of the light-houses placed on them—the mail steamers are continually compelled to move at half-speed, and, sometimes, even to stop, when they approach this dangerous vicinity, until the obscurity has been dispersed by sunrise or wind. The result of this culpable negligence in not providing a light-house may readily be conceived : the most fearful disasters have taken place on these rocks, some of which have been so complete as to leave not one to narrate the mournful calamity, which has been indicated on the following day by the floating remnants of the wreck. It has been frequently said that the darling son of

Henry I. was lost on these rocks ; but it appears tolerably certain that this catastrophe must have occurred nearer to the mainland, either to Alderney or to France, than the Caskets. At twilight it is said the young prince's vessel left the harbour of Barfleur for England, manned with fifty rowers. Wine had been too freely given to the sailors, who, with the captain and attendants of the prince, all became intoxicated. Desirous of passing by every ship that was before them, the sailors rowed with unusual speed, when, by the drunken carelessness of the helmsman, it struck suddenly on a rock, at that time covered with the waves, but known and visible at low water. The remaining part of this painful accident has been often told. It is, however, apparent from the account itself that the Caskets were not the rocks in question, since they are not only never covered by the waters, but actually stand a considerable height above them. A calamity attended with a far greater loss of life, and which upon all testimony appears to have taken place on the Caskets, was the loss of the *Victory*, October 5, 1744. Admiral Sir John Batehen's fleet had been on a cruise of ten weeks in quest of the Brest fleet, and, being unsuccessful in meeting with the French squadron, were returning to port, when they encountered a tremendous gale, which

dispersed the fleet, and disabled several of the frigates composing it. The other ships, after the gale was over, safely reached Spithead; but the *Victory*, having on board the admiral, a splendid line-of-battle ship, carrying 110 brass guns and eleven hundred men, among which were about fifty gentlemen volunteers, was nowhere to be found. Two of the King's ships were sent in search of her, and met with several pieces of a wreck, and part of a carved work which belonged to the stern. On making inquiry at Alderney, it appeared that on the night in question they had heard upwards of a hundred guns fired, which they conceived to have been from some vessel in distress. At daylight the vessel was clearly seen making signals of distress, but the tremendous storm which was blowing rendered it impossible to render any assistance. The signal guns continued to be fired during the next night, and ceased at the break of day, when probably the magnificent ship went to pieces. The inhabitants of Alderney saw the sea covered with pieces of the wreck, and not a single individual of the eleven hundred on board escaped to give an account of the calamity. The *Victory* was the largest ship in the British fleet, possessed the finest set of guns, masts, and rigging, was manned by the flower of the navy, and carried

many noble and precious lives—all were lost. Previous to this calamity, the Caskets had attained a painful notoriety in consequence of repeated disasters occurring in this part of the channel.

In 1723, after a petition from the Governor of Alderney, the lighthouses were erected on three rocks. The great rock on which they are built is thirty feet above the level of the sea. The three lighthouses are built in a triangular space, enclosed by a strong wall. Two of them are lower than the others, and are about fifty feet from each other. The higher one lies toward the north, and is placed on the most elevated part of the rock, being about one hundred and fifty feet distant from the others. Within this area, which forms a sort of walk, and is kept in good order, is contained a plot of ground, where a few vegetables and flowers are cultivated. As the rocks are themselves entirely barren, and afford no shelter or the accumulation of soil, the whole of the earth in which these plants grow was brought in boats from Alderney. The spot forms a sort of mimic garden, where the solitary hours of the individuals who attend to the lights are viled away. There is also a small house for the accommodation of the Trinity House Master when he visits the establishment, with a ware-

house and shop for the workmen who are required to make occasional repairs to the lighthouses. Within the lighthouses are apartments for stores and provisions for the winter, when it would often be impossible to obtain the necessary supplies from the land. In an old writer's account of the Caskets, he states that these rocks are much dreaded by the mariners, who call them "Quasquettes," and out of one of them, "properly named Casquet, there gusheth out the most sweet spring of fresh water, which is a great comfort to the whole island, but more especially to the fishermen who beat up and down about them." It is said that this spring was first discovered by some pigeons which were kept there by the persons having charge of the lighthouse. It has, however, now entirely dried up, and no other spring can be found among the rocks. The supply of water is consequently obtained from rain, or by occasional subsidies from Alderney. When the keepers of the lighthouses wish to communicate with the neighbouring island of Alderney, they do so during the day by means of a small telegraph, or at night by lighting a fire on the rock. The force of the elements is sometimes severely felt by these isolated buildings. In the storms of winter the wind howls furiously around them, and the sea, provoked by its

violence, and receiving the additional impulse of the tidal current, dashes enormous bodies of water over the rocks, striking and often seriously damaging the lights. At such times, birds, unable to contend with the wind, are often dashed against the glasses, which are shivered into fragments, while the poor birds fall dead within the building. The tumult of the elements at such times is grand and terrible, and the keepers must need much self-possession and a well-grounded reliance on Him who is mightier than the roaring sea and howling tempest, to maintain their sense of security undisturbed. And, indeed, at times considerable cause for alarm exists, for in the month of October, 1823, a violent storm altogether destroyed the lights. Each lighthouse is called by its own name; one has that of St. Peter, another that of St. Thomas, and the third is called Donjon. In order to avert the calamity of destruction by fire—of which lighthouse annals present some terrible examples—the platforms of each are sheathed with copper, as is also the staircase. The persons in charge are required to keep a journal of wind and weather, and of such circumstances as occur deserving of notice, and they receive a salary of about fifty pounds a-year. One would suppose that life must be very monotonous on these rocks, and

the confinement to this narrow spot irksome in the extreme, particularly as the inhabitants of Alderney can be seen enjoying their liberty in their comparatively extensive territory. Time and habit, however, reconcile man to the most wearisome mode of life, and it has been said that one of those whose life is ordinarily spent on these rocks, after a temporary absence from them, returned without a wish to enter into the great world again! To persons thus separated from human society how precious should be that exhaustless Volume which reveals the council of God toward mankind, and the great plan of man's redemption, renewal and sanctification, through the atonement of the Redeemer, Jesus Christ.

The Caskets fall naturally under consideration in a chapter specially dedicated to the "Rocks" of the Channel Islands, since they are not only the first encountered by the traveller, but they also constitute a good example of the stony guardians of these isles. The Island of Guernsey itself has been called, and appropriately so called, the Isle of Rocks, and, as it is approached, the significance of this title is rendered manifest by the number of rugged masses which rise above the surging waters. It is necessary to give an outline of the relative position of the Channel Islands

before proceeding to consider specially their geological structure and physical peculiarities, and this is, perhaps, the best place for such a purpose. Jersey is the largest of the group; Guernsey the next; after this come Alderney, Sark, Herm, Jethou, L'Isle des Marchands, the Isles of Lihou, Burhou, and the Caskets. In most geographical works the existence of the latter small islands is ignored, and the Channel Islands are known in schools as Jerscy, Guernsey, Alderney, and Sark. Yet the small isles in question, Herm, Jethou, L'Isle des Marchands, or, as it is sometimes called, Brechou, and the small islands of Burhou, Lihou, with the rocky group of the Caskets, contribute much of their charm and local interest, though little of their importance, to the Channel Islands. The form of the Island of Jersey is oblong; it is about eleven miles in length from east to west, and varies from four to five and a half miles in breadth. Together with the others which form this group, it lies in that part of the English Channel called Mount St. Michael's Bay, at no great distance from the coast of Normandy and Brittany. Jersey contains a superficies of between thirty-nine and forty thousand acres. Its contour line exhibits that of an inclined plain. Its northern coast is elevated to rather more than 300 feet above the level of the sea,

into which it usually descends abruptly; but from this coast to its southern extremity the elevation of the land declines until the south coast is only just above high-water mark: thus the general inclination of the land is from north to south. In this respect it offers a striking contrast to the Island of Guernsey, which inclines in exactly the opposite direction. The whole surface of the island is intersected by deep valleys, down which tiny rivulets flow, and, after wandering among a few fields, are lost in the sea. The sides of these valleys are frequently steep and eraggy, and such an abundance of fresh water springs is found in them, that perhaps few tracts of country of equal extent are so lavishly supplied with water. Nearly the whole island is divided into small enclosures by lofty hedges, thickly studded with timber, which, together with the numerous orchards, gives a woodland character to the landscape. In the western part of St. Brelade's parish is situated an elevated tract called the Quenvais, covered with loose drifting sand; and adjoining this, but at a much lower level, is the sandy district of St. Ouen's Bay. The scene presented on approaching St. Helier's is extremely beautiful. The abrupt, precipitous, and formidable line of the northern coast is past, and, after sweeping round a point called Noirmont Point, the mag-

nificent bay of St. Aubin is entered. The sloping shores of this bay, above which rise woods, orchards, and fields, with numbers of villas and cottages dotted among them, together with the commanding heights which rise boldly above the town, and the stern appearance of Elizabeth Castle, combine to give an air of great beauty and picturesqueness to the island, and form in all respects a striking contrast to the eye lately welling on English scenery. The coast of France is very plainly perceptible from Jersey, and it is situated at a distance of about ten leagues from Cape la Hague. The distance from Guernsey to Jersey is about seven leagues.

Guernsey, the next in point of size, differs in many respects remarkably from its sister island. In shape this island is nearly triangular, the longest side being about nine miles and a half in length, and lying toward the north-west. This coast is low and flat in many parts, and is broken into a number of small and picturesque bays, offering a singular contrast to the wall-like northern coast of the island of Jersey. Proceeding toward the south, the land rises until the southern boundary is reached, which, like that in the opposite direction in Jersey, is steep, abrupt, inaccessible, and almost everywhere, throughout its extent of six or seven

miles, plunges down into the blue waters which career along its base. The high ground is intersected by several narrow valleys and beautiful glens, among which the brightest and purest springs of water are found abundantly. But the valleys are not so numerous nor so deep as those of Jersey, the southern half of the island presenting an elevated table land descending rather suddenly to the wide and rich plain which, interspersed with a few small hillocks, occupies the rest of the island. Guernsey has much less timber than the sister island, and its surface is divided into a number of fields and enclosures which mimic those of larger regions. At the northern extremity of the island is situated a sandy common, which is scantily covered with the vegetation peculiar to such a soil. On this coast also several small marshes exist. The gradual rise of the land may be seen, and an excellent contour line might be drawn of the whole island, by viewing it from an elevated point in the opposite island of Herm.

Alderney, separated from the rest by a considerable interval, is the nearest of these islands to the French coast, being about seven miles west of Cape La Hague, in Normandy, from which it is separated by the strait or Race of Alderney, a channel whose swift tidal current

renders it peculiarly unsafe in stormy weather. So clear at times does the French coast appear, that it might be mistaken by a stranger for a distant part of the island itself. It is about three miles and three quarters in length from north-east to south-west, and is scarcely a mile and a half across its broadest part. The south and west coast, like those of Guernsey, are greatly elevated and precipitous, and the land inclines toward the eastern and northern shores, presenting a pretty uniform surface without any valleys or glens to give variety to its aspect. There is an almost total absence of trees or plantations of any kind, and this gives to the island a bare and deserted aspect. There are few enclosures, and hedge-rows are sup-planted by low stone walls. The appearance of the land under cultivation is very singular; in consequence of the operation of a law which subdivides landed property to a most minute degree, the cultivated parts of this little island present a most odd and patchwork-like aspect. It is all laid out in narrow stripes, producing different sorts of crops. These lie in a number of different directions, and are so narrow, that in watching a proprietor ploughing his scrap of land, it is sometimes difficult to see how he will find space enough to turn his plough on his own land. There is a good supply of excellent

water in almost every part of the island. Seen from the island of Herm, Alderney stands out of the sea like a massive tower, and has a beauty peculiarly its own when thus viewed under the light of a southern sun, which renders manifest, even to the unassisted eye, many of the rugged features and rocky chasms of its southern coast. From every elevated part of Alderney the white lighthouses on the Caskets, are distinctly visible in ordinarily clear weather.

Sark, or as it is sometimes, and probably more correctly written, Serk, is almost seven miles east of Guernsey, from which island it is seen with great distinctness, and its general outlines are well defined. Its greatest dimension is about three miles from north to south, and it is about a mile and a half wide at its widest part. It is so constructed near the centre of the island that it may be, and is commonly, regarded as divided naturally into two parts—Great and Little Sark. To the part connecting these two, which is often incorrectly called a natural bridge, being in fact an extremely narrow and lofty pass—attention must be again directed. Sark differs from all the other of the larger islands in having no beach, properly so denominated, in any part. It is an excellent example of a table-land. Its walls tall, precipitous, and abrupt, stand on every

ide out of the waters, offering defiance to the entrance of man; and although here and there a tiny shore is formed in some inlet, the greater part of the coast has a wall-like character, rendering it formidable to any who might attempt to force an entrance into it. The ordinary means of access are through a tunnel driven through a rock, or by climbing by the assistance of ropes and steps cut in the face of the cliff. The interior of the island presents a charming contrast to the forbidding exterior. Its surface is broken into several romantic valleys watered by tributary brooks, diversified with wood, and in many parts under extensive cultivation. The transition from the outside to the luxuriant interior of this beautiful island, leaves an impression on the mind which cannot soon be effaced. Sark is the most beautiful island of the whole group, and perhaps of any attached to the British crown; but until of late years it has been seldom visited, and its scenery is but little known beyond the group of islands of which it forms one.

At a short distance from Sark, and separated from it by a narrow strait, through which the tide courses furiously, is the remarkable island called L'Ile des Marchands, or Brechou. Like Sark, from which the sea seems to have torn it asunder, Brechou stands from the waters

with abrupt and lofty sides. It has no shore. An attempt to cultivate the land was made a few years ago, but it is now given up. On our visit we were compelled to climb up a natural staircase to gain access to its interior. The soil appears good, but the difficulty and uncertainty of approach renders it an undesirable place for any farming operations. A deserted cottage and stables exist in one part of it. A few sheep find pasture there, and a multitude of rabbits thrive on the desolate spot. The rugged and beautiful sides of Sark are best seen from this island; its chasms, indented rocks, and stern outline are nowhere beheld in greater beauty.

A little to the northward, and between Guernsey and Sark, lies the island of Herm. This island is about three miles distant from Guernsey, and the same distance from Sark. It is about a mile and a half long, and about half a mile in breadth. Like Guernsey, it is loftiest in its southern part, where the whole coast line is formed by steep and tall cliffs. It inclines toward the north abruptly, until its southern shore gently slopes into the waves. On this side are some sandy plains and dunes, and the celebrated "shell-beach," to which our attention must be again brought, forms the shore in this direction, extending from half to

three quarters of a mile. Herm contains many Druidical remains.

Jethou, a singular little island, lies about half a mile distant from Herm, with which there exists evidence to show that it was formerly connected. It is less than half a mile long, and is about a quarter of a mile broad. It is considerably elevated in proportion to its extent, and is precipitous on all its sides except one. There is a small orchard in it and two houses. Upon the most elevated part is a flag-staff. At each end of this little island rock are two conical eminences, separated from it at high tide, but accessible at half tide. They are merely rocks covered with a scanty clothing of liehens, and with here and there a tuft of grass. Upon one of them a sea-mark for navigators has been raised. From Herm, the appearance of the central eminence, with its rocky appendages at each end, is very peculiar.

The little island of Lihou is united to the north-western coast of Guernsey by a narrow causeway. For several hours, from about half-tide to half-tide, or rather less, this causeway is passable for horses and carts, as well as for pedestrians who do not mind wetting their feet. After this time it is completely covered by the sea, and is accessible only by boats. The island is, perhaps, a mile in circumference, and

less than a quarter of a mile in breadth. On the side next Guernsey the beach is composed of pebbles, but all the other sides are rocky, and the masses which compose them are tossed about in great confusion. It contains some interesting antiquarian remains. There is one house in it, with a small cultivated patch of ground walled in by a high and strong wall. The island is peculiarly exposed to the buffettings of the elements; and during the tempests of winter the inhabitants of the single house must be placed in no very enviable position, amid the howling of the wind, and the incessant noise of the sea dashing its immense waves upon the rugged wall of rocks which begirts the little isle.

Burhou is a small island lying a little distance to the north-west of Alderney. It is separated from the latter island by a formidable passage called the “Swinge.” It is surrounded by rocks of the wildest aspect, and access to it is difficult in any but the calmest weather. It is uninhabited. It is of considerable extent, and a multitude of rabbits thrive in it almost undisturbed. In some points of natural history the island of Burhou is interesting.

Returning now to the more immediate subject of this chapter, the rocks of the Channel Islands, it may be remarked that they consist

exclusively of the primary, or, as they are often called, the granitic, or crystalline rocks, and the unstratified rocks derived from them. Surprise is always experienced by those who, leaving the shores of England at night, see the peculiar and rugged features of these rocks in strong contrast with the scenes left behind on the following morning. The point of embarkation being commonly Southampton, the impression of the alluvial tracts around that town, and especially of that most remarkable series of strata presented by the Isle of Wight, are not effaced before the eye is called upon to survey a scene of the most opposite description. In this contrast we have an interesting illustration of the fact, that the geological structure of any district is the determining cause of its peculiarities in respect of scenery. No rocks can be more strongly in contrast with each other than those belonging to the granitic series and regularly stratified rocks, such as the chalk of the Needles. The appearance of a stratified rock evidences a certain degree of mechanical regularity in its formation which is generally absent from rocks belonging to the unstratified class, granite, syenite, &c. The one sometimes resembles the works of art; the other wears resemblances the most wild, irregular, and fantastic, to almost every object that can be named, and particu-

larly to heads and bodies of animals. The appearance consequently of such rocks as these, seen lifting their foam-covered heads above the blue waves, together with that of the islands into whose structure they enter, may be in some degree imagined. The scenes themselves are singularly wild and peculiar.

The rocks of the Channel Islands are in no instance of the lofty and imposing character of those which enter into the composition of the western islands of Scotland, with many of the wondrous beauties of which most persons are familiar from the pictures of them extant. The loftiest rocks in the whole group are those of Sark, and here they do not exceed four hundred feet in perpendicular altitude. The highest rocks in Guernsey are about three hundred feet above the sea-level, and those in Jersey and Alderney are not higher. The rocks which render the coast terrible to the navigator are not above twenty feet high; many are just visible at high water, and many more are only visible at low water: perhaps the majority are entirely hidden by the sea. Approaching the Channel Islands from any direction, and perhaps more particularly from England, these stone guards of the iron-bound coast appear in great numbers for some time before the harbour is reached.

The position of these rocks is in many instances marked by beacons of various kinds; but the closeness of these to each other indicates the danger of the passage, and the formidable line of rock-defences with which the islands are protected. And in truth shipwrecks of the most lamentable kind have taken place at times among these rocks.

An old writer describes the perilous position of a vessel among these rocks in an interesting manner. The account is given in Dicey's History of Guernsey, and the author himself was a partaker of the perils he describes. The vessel was bound from Antigua to London, and had entered the English Channel, when darkness came on, accompanied by tempestuous weather; the captain, ignorant of his proper position, gave wrong orders for steering the vessel, and about twelve o'clock at midnight all on board were dreadfully alarmed by the noise of the sea breaking against the rocks. The night was so intensely dark as to render objects at the smallest distance wholly imperceptible, and on sounding the sailors found not above one fathom more water than the ship drew. The alarm on board was intense, and the shrieks and cries of the passengers tended in no slight degree to add to the confusion and distress. An attempt to get down the

anchors was made, but two were actually cut to pieces by the rocks. The sheet anchor providentially held, and the ship was thus prevented falling on the rocks. When morning broke, the surprise of all on board at their perilous position can hardly be conceived. The ship was completely environed by rocks, and the mainland was close to them. Great numbers of the people of the island, for it was found to be on the coast of Guernsey that they lay, came running to the shore, astonished at beholding a vessel at anchor where was never one before. Sail was instantly made, and with the utmost difficulty the ship was safely navigated between two rocks, even with the benefit of daylight, through which the hand of the providence of God had guided them in security during the darkness of the night. A large ship which accompanied this vessel was lost near the same spot with all on board. More recently, a large homeward-bound ship was lost with all on board upon the same coast, and a tablet to commemorate the painful event was placed in the Vale Church. It may appear surprising that amid dangers so numerous, the pilots themselves should be able to steer correctly ; but a long acquaintance with the coast, accompanied as it often is with some memorable

escapes of their own, fixes indelibly the formidable features of the region upon their memory, and accidents are seldom or never heard of with ships when once in the pilot's charge.

Perhaps the most painful instance of the dangers of the sea surrounding these islands, and of the negligence of those who had the charge of the vessel, was the wreck of the *Superb* steamer during the summer of 1850. On the 16th of September a small steamer called *La Polka*, set out on an excursion to St. Malo from St. Helier's, Jersey. When within six miles of a singular group of rocks, called the Minquiers, she sprang a leak, and the captain had barely time to run her within a quarter of a mile of the easternmost rock, called the Matrielle, and land his crew and passengers, before she foundered in deep water, and entirely disappeared. After passing a dismal night on the bare rocks, the passengers were picked up by the captain of a steamer who had perceived them through his glass. They had been twenty-four hours on the rock, living on two loaves and some biscuits, and water furnished them by the poor fishermen living on the rocks. They had lighted a fire during the night without attracting any assistance. It

was upon these rocks, attracted, it is said, to the dangerous spot by the desire of the passengers to see the wreck of the *Polka*, that the *Superb* steamer became itself a wreck. The *Superb* was on her way from St. Malo to St. Helier's, in broad daylight, and with scarce a ripple on the sea, when suddenly she struck violently on the rocks, which were then covered with water, and immediately she filled. The boats were lowered, and one was immediately filled with persons. Sad, however, to relate, the plugs were not in the boat, and it was seen gradually sinking by those still in the steamer, without possibility of relief, and the countenances of those unhappy persons presented a scene of horror beyond description, for they sank shortly in smooth water. The tide falling fast left the rest in safety on the rocks; but the scene of anguish and alarm baffles description. They were taken off the rocks by a cutter, and from her they were shortly after taken by a steamer; but on approaching St. Helier's in the dark, she also touched the rock called the Oyster Rock, to the further alarm of the surviving passengers, already exhausted by their fearful position and anxieties. Two little children, who in the previous week had been rescued from the wreck of the *Polka* on the same spot,

were thrown by the shock into the sea, and were no more seen. A more remarkable succession of calamities on the same spot has never occurred in the history of these islands; and the melancholy catastrophe of the wreck of the *Superb* only too accurately confirms the statements made as to the dangers which render these islands so difficult of approach whether by friend or foe.

The forms assumed by the rocks on the coast, and the detached masses in the sea surrounding these islands, are in some instances apparently the result of weathering, and in others of the mechanical action of the waves. It is inconceivable that some of the wild-looking forms which stand in grisly majesty out of the waters, were of their present shape when first produced. The action of the elements, and the attacking force of the waves, have sculptured them as with nature's own hand into their fantastic shapes. The finest example of wild scenery, produced by such causes operating upon the naturally bold and uncouth figure of the primary rocks, is to be found at one extremity of the beautiful bay called Moulin Huct, in Guernsey. These rocks are shown in the frontispiece to this work, in one of their most picturesque aspects. The summit of the tall

cliffs on its eastern side is broken into singular turreted masses, between which intervals are left so as to give to the rocks the almost precise resemblance to a ruined fortress, which is heightened by the luxuriant growth of mosses, liehens, and ivy which climb over the mimic masonry. This part is appropriately called the Castle. But in order to obtain the best view of rocks carved into a wild group by the elements and the waves, it is necessary to descend to almost the sea level within the bay. Then the four black and strange-looking rocks, known as the "Needles" or the "Stacks of Peas," which project like a vast pier in ruins across the mouth of the bay, stand in bold relief against the sky, while in the intervals which separate them the blue and curling waters of the tide without are seen when all is still and peaceful within. These rocks, of which a beautiful photographic representation was obtained, forming the original of the engraving at the head of this chapter, are of gneiss, and appear at one time to have been united into a solid mass—a lofty and magnificent natural breakwater to this bay. The action of the elements above, and that of the waves below, appears to have washed away the softer portions which united them. The sea, provoked by southerly gales, drives its immense

waves with the utmost force and fury on this coast, and a little breach once commenced became in time wider, until now, at high water, the waves roll uninterruptedly through the chasms they have formed for their passage. The summit of one of these beautiful rocks wears a grotesque resemblance to a human head when seen in certain directions. A curious detached piece of rock projects from near the summit of another, at an angle of almost precisely forty-five degrees. The outermost of the four, which breasts the strong influx of the tide into the bay, is a bold square mass, well fitted for such a position.

The whole of this coast exhibits those features of abruptness and ruggedness which give to the scene a character peculiarly wild and interesting. In consequence of the unequal durability of many of the rocks, and of the abrading influence of the powerful waves which dash upon them, they are occasionally met with carved into the most singular shapes, but in such cases exhibiting that smoothness of outline which indicates the fact of the shape having been produced by the agency of water. At one point of this coast is a black mass of hornblende, fashioned into the rude semblance of a gigantic beast couchant, and defending the narrow entrance to a cave extending a little way into

the cliffs, and nearly filled with water at high tide. When the waves rise with foaming summits over this mass of rock, a very picturesque appearance is given to it. At a spot called the Gouffre, on this coast, and at another more westward, called the Bigard, the rocks assume their greatest degree of wild and confused arrangement. Their hardness of outline is particularly visible at these places, and the almost adamantine resistance they offer to the incessant buffetings of the sea, tends to preserve this character. Lichens of various hues, green, golden, and white, clothe the higher parts of the rocks, and communicate to them a solemn and ancient look. Clusters of samphire here and there rest upon the narrow ledges, and look green and fresh by the side of the apparently juiceless and withered vegetation which enwraps the surface of the cliffs. The sea-gull dwells in the inaccessible heights, and sea-fowl scream over the boisterous waters below. The wind, bearing clouds of vapour from the bosom of the warm Atlantic, often clothes their summits with white, while the heavy surf also shrouds in white their wave-washed base.

A continued succession of similar scenes, yet each diverse from the other, presents itself, to the termination of the coast, on this side of the

island. One rock in particular attracts notice, from its isolated position in the waters; and from the peculiar boldness of outline which it



ROCKS AT GUERNSEY.

exhibits it is called the Congerel. It can only be reached by means of a boat, and its solitude is consequently seldom invaded by any

creatures other than the sea-birds, which make it their abode. At Pleinmont, where the rocks receive the full force of the Atlantic storms, some interesting effects of their action upon the rocks are observable. In the parish of Torteval, at a spot called Les Thielles, the intrusion of veins of trap into the gneissic rocks gives a new feature to the latter. The lines of dark veins strongly contrast with the colour of the gneiss, and something of the step or terrace-like appearance peculiar to rocks thus constituted, becomes visible. In some places the intruding veins are as thin as the edge of a knife, in others they are some feet in breadth.

The rock scenery of Alderney is scarcely inferior to that of any other of these islands. Its tall, perpendicular, southern and western coasts, which are composed of porphyritic rocks, are, in many parts, singularly beautiful and picturesque. One remarkable stone on this rock of the island has been carved by nature into the resemblance of a chair, and is now known as the Lover's Seat. On the north-western coast is another similar stone, which is called the Monk's Chair. The porphyritic rock on the western and southern sides of the island, appears to have a great tendency to wear before the effects of time. At the western point in particular, where it is exposed to the

undiminished force of the wind and the sea, it has undergone considerable changes, and many detached rocks of the most rude and picturesque forms are the result. About a mile and a half to the westward of this island, a well-known isolated and precipitous rock, called Ortac, is situated. This singular rock, which is rendered conspicuous by its form and position, is about an hundred feet high, and connected with the chain of rocks that stretches from the little island of Burhou. The figure of this rock gives the impression that it is formed of porphyry. Perhaps one of the most singular rocks about Alderney is that called La Pendante. This rock is to be found at a point on the southern shore of the island. It resembles exactly a square tower of masonry, but it has the curious peculiarity of being inclined almost as much as the Leaning Tower of Pisa, whence probably its name, the Hanging Rock. This rock is about twenty feet high, and consists of portions of a stratified rock resembling grit, which is found in Alderney. A very singular and picturesque scene is presented by a headland, called Fourchi Point. Here, in consequence of a great fracture in the porphyritic rock, of which it is composed, are two singular pyramidal rocks, flanked by a bluff square mass, and resembling in some respects those at Moulin Huet, in

Germany. These rocks are represented in the accompanying engraving ; the open water is the



FOURCHI POINT, ALDERNEY.

Race of Alderney, and Cape La Hague appears in the distance.

The most remarkable rocks about Jersey are to be found on its northern coast. Near the beautiful cove called Grève de Lecq, a large rock, called the Chateau de Lecq, is found. The base of this cliff on the land side presents some appearance of a rampart. Its northern declivity is, in several places, so precipitous, as to assume a beetling form ; in other parts it descends to the sea in huge masses of bare and

rugged rock. This part of the coast is very difficult of access, the descent being nearly perpendicular. In order to obtain the sea-weed, the collection and use of which must be noticed in another place, a staircase has been cut by the ingenuity of a few peasants, the very appearance of which is terrific. By this means, though not without danger, the coast is accessible to the adventurous foot. A dreadful accident, however, happened on this curious staircase. One evening a man, laden with seaweed, in going up the steps, fell over; he was found on the following morning in a deplorable condition at the base of the rock, and soon after died of the injuries he had received. Near this spot two fine pyramidal rocks stand in bold outline from the turbulent waters at their feet. These rocks are detached, and advanced in front of the coast. The imagination might find a number of grotesque resemblances in the masses of rock which compose them. They are represented in the annexed cut. The more distant of the two is perforated by an arched cavity, so as to give it something of the appearance of part of a Gothic ruin. From the point of view at which this picture was taken, this arch cannot be seen. The rocks are composed of granite or syenite. At the north-western boundary of Jersey, the rocks assume

their most formidable aspect. Only a few straggling and devious sheep-walks lead down the cliffs in this quarter. The view of the over-towering rocks above renders the scene from the



ROCKS AT GREVE DE LECQ, JERSEY.

coast extremely grand and beautiful. Masses of rock rendered hoary with lichens, the growth of ages, protrude in rugged grandeur, and give a solemn stillness to the scene in that direction, which strongly contrasts with the long and heavy roll of the waters, incessantly grinding down slowly, but surely, the obdurate masses which resist them. Not far from Guernsey, in

this part of Jersey, rises a most singular colossal rock. It is an irregular pillar, more than a hundred feet in height, and tapering but little from the broad craggy head. This natural tower is very appropriately called Le Pinacle. In addition to the rocks forming the coast line, enormous beds of rocks stretch for several miles from high-water mark, on the southern and eastern shores. Great chains of rock extend at some distance from the shore, along both the north and south of the island. Numerous isolated groups, many of which are but a little elevated above the surface of the water, render the seas terrible to the mariner, so much so, that it is usually said, when a vessel is seen in distress in a heavy gale, that if she belongs to the island, she is safe; but if otherwise, she is in imminent peril of being lost.

The rock scenery of Sark is, perhaps, the most imposing of any, and has long attracted the admiration of the residents in the other islands. The approach to this romantic island has already been briefly noticed, and is such as to excite the most lively anticipations of surprise and admiration. It is reached from Guernsey by means of a small cutter, which plies frequently across, and in favourable condition of wind and tide the passage may be accomplished in two or three hours; but the velocity

of the tidal currents, and the capricious nature of the winds, may often combine to render the voyage one of ten hours, or more.

The ordinary places for landing are at the remarkable harbour called the Creux, and among the wild and precipitous scenery of a spot on the other side of the island nearest to Guernsey, called Havre Gosselin. The latter is the place of debarkation to be selected, if a beautiful view of Sark rock scenery is desired. On climbing the wall-like sides of this wonderful natural harbour, and gaining the summit of the rocks at the side, a picture of broken water and confused masses of rock is presented, which is perhaps without its parallel in these islands. Water deep and clear washes the base of the rocks on which the spectator stands, and contrasts, by its stillness and unbroken surface, with the eddying and boiling current a little beyond, where a strong tidal stream rushes between Sark and the island of Brechou. Dark masses of rock oppose this stream, and receive the full impulse of the resisted current. Across the strait the sides of L'Ile des Marchands, which are cleft and rugged, and stained with dark seams, present themselves to view. In the midst of the strait masses of rock appear, whose green-capped summits form a singular contrast to their barren sides and base, around

which violent eddies are created in the waters. The whole scene, though not on a very large scale, nor of imposing area, is one of great beauty and picturesque arrangement.

The Coupée, which constitutes a kind of



THE COUPÉE, SARK.

natural bridge between Great and Little Sark, deserves particular notice, and constitutes one of the natural curiosities of this island. The following description of this part of Sark is given by a friend of the writer's, for some time resident in the island :—

“ This singularly formed and narrow isthmus

is a natural bridge of connexion, and the only link of communication, between Great and Little Sark; it is four hundred and fifty-six feet in length, varying in width from five to eight feet. The western, or Jersey side, is quite inaccessible—indeed, it is but forty-one feet out of the perpendicular at its base. The altitude, from high-water mark to the top of the cliff, is three hundred and eighty-four feet, by actual admeasurement made by Mr. John Prince, late superintendent of the mines. This elevation, higher than St. Paul's Cathedral, is lost to the eye in looking down, unless some fishing-boat, or *vrec* gatherer, should be below, whose pigmy size would dispel the optical illusion. The distance is also rendered more deceptive by the magnitude of surrounding rocks. A portion of the cliff having fallen in 1811, near to the junction with Little Sark, the path was cut through the rock, in order to lower the road, before which it passed, in an undulatory form, nearly over the top of the pinnacles, and was not more than four to six feet in width: but, nevertheless, traversed by horsemen occasionally. Doubtless, the Coupée is shorn of many of its terrors, and, at the same time, robbed of some of its sterner features, by this necessary precaution. Imagine the originally dangerous state of this lofty pass, and the situa-

tion of a horseman on its slippery tract, or any pedestrian on the apex of this one-sided pyramid, who, whilst leaning from the abyss on the one side, seems borne up by the stormy wind from the other. It is not surprising that some fatal accidents should have occurred, especially to persons crossing over in a state of inebriety—indeed, since the alteration, an old man, laden with bundles of straw, was carried over by the wind, and died the following day, in consequence of the injuries he sustained. Another person, a miner, subject to attacks of *delirium tremens*, when crossing the Coupée, was frequently attacked with violent paroxysms of terror, and with difficulty prevented by his companions from falling over. The present road, in some parts, is still without wall or protection of any kind on either side, and the rocks, being of micaceous schist, rapidly decomposing by the action of air and water, large masses hang, apparently loose, on the verge of the precipice, ready to be launched into the abyss below, or detached piece by piece, and carried away by the fury of the elements.

" The objects worthy of notice on the shore are the strata—the caves—the arch—the tunnel rock and broken Creux, near the Pointe—zoophytes—and some rare marine plants, well deserving the botanist's attention. ' The stra-

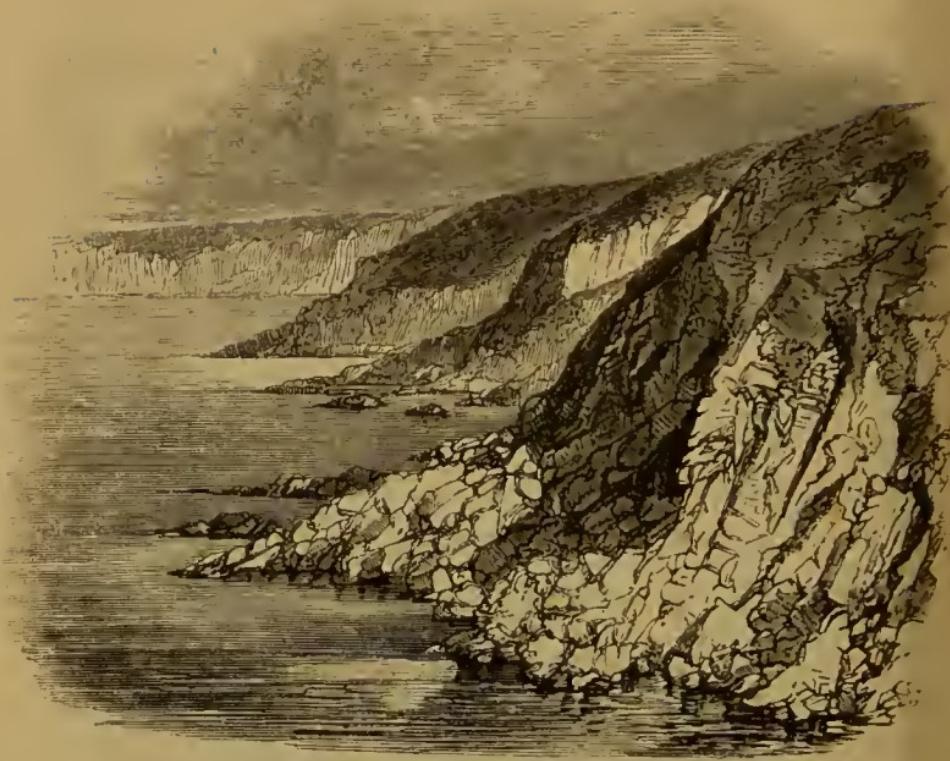
tification of the rocks is open and extensive; from east to west there is a vein of porcelain clay, eleven or twelve feet thick, intersected with grains of quartz, and purple, red, and yellow oxide of iron, which are probably the



VIEW OF SARK, FROM BRECHOU.

remains of veins running through the granite, from the decomposition of which the porcelain clay appears to have originated. The appearance of the original granite is in many parts visible.' ”

We shall close this chapter on the rock scenery of the Channel Islands, by a slight reference to that of Brechou, or L'Ile des Marchands. In order to reach this little island, a boat must be taken from Sark. Its sides are steep and inaccessible, excepting at a small natural harbour on the Guernsey side, and at a little landing place on the side towards Sark. The highest point of rock being gained, the view toward Sark across the Gouliot stream well repays the fatigue of the ascent. Standing here, and looking toward Sark, a wild scene opens to view. The precipitous sides of Sark lie in the distance, cleft in a remarkable manner, and the deep chasms running diagonally across the island. The roaring stream impetuously dashes against the cavernous sides of the rocks beneath the feet, and in the middle distance an uncouth mass of rock breasts the current. This mass is deeply hollowed by a cave on the side next Brechon, at the entrance of which a singularly formed rock projects, not unlike a sphinx in outline, and seeming to guard the approach. A numerous flock of gulls whirling below give animation to a scene otherwise solitary and wild.



ROCKS ON THE COAST OF JERSEY.

CHAPTER III.

GEOLOGY AND MINERALOGY.

THE Geological structure of the exposed parts of any country may be said to determine its general features. It appears singular that this has escaped the attention of those whose beautiful representations of nature line our walls and ornament our books. The artist spends much of his time in the study of human anatomy, and devotes special attention to those parts of the frame which give the peculiarities of form

and expression appropriate to each action of life. But it seems to have been forgotten that there is an anatomy of nature as well as of man; and that the splendid scenery of the world, formed for man's enjoyment and instruction by the hand of a benevolent Creator, is as entirely dependent upon the mechanical and often chemical peculiarities of the rocks and solid portions which compose it, for its expression—its aspect of nature—as is the face of man, or the outline of his limbs, upon the muscular arrangements beneath the external skin. The study of geology becomes, therefore, as essential to the landscape-painter, as that of anatomy to the historical or portraiture artist. Even the uneducated and unscientific are able to recognise the imperfections of landscape-painters in this particular, and though perhaps unable to explain their faults and inconsistencies, they nevertheless recognise the fact that something is wrong about the picture, although they do not know what. The geologist at a glance perceives, and is able to point out the inaccuracy, and he marks the almost ludicrous fact, that to the characters of what should be a stratified rock, the artist has given those belonging to a non-stratified one, or the contrary; while the peculiar forms of vales and hills, which are all determined to a great degree by

their geological structure, are strangely blended together.

Dr. Macculloch, a native of Guernsey, in his work on the Western Isles of Scotland, has written some excellent remarks on this subject. Speaking of the works of various painters, with reference to their geological accuracy, he says, "Salvator is beautifully correct in his fine picture of the preaching of John the Baptist, a landscape evidently painted from the life. But to compensate for that, he is wrong twenty times even where he seems equally to have painted from nature, and evidently from want of scientific knowledge in this particular department. Nor is it possible to contemplate that picture without being aware of the value which it derives from its truth. Thus, also, in his magnificent composition of the Golden Calf, Claude has treated his rocks with as much truth as effect. Yet, even with him, the careful painter of nature, that perfection in this department of landscape is rare—a proof of the necessity which a landscape painter is under of knowing the anatomy, if I may use such a term, of his rocks as well as of his trees, his plants, his shipping, his architecture, and his animals. Of Roth, the Poussins, and of Nicolo chiefly, I may say what Peter Pindar says of many landscape-painters, that there are too often "*garret rocks*," though sometimes

marked by truth; and if Gainsborough's are like nothing on earth, it is no cause of surprise, when we know from what materials he constructed at least his style of landscape. I might illustrate this without end, for good and for bad, but chiefly the latter, from painters without number; from Bergliem, Du Jardin, Ruysdael, Wilson, Rubens, Turner, and many others, but it is unnecessary. I must maintain that until landscape painters are familiar with the leading rocks of the earth and their characteristic differences, their works will be imperfect. To represent her correctly, nature must be known '*intus et in cute.*' I know of no place where, from want of this species of knowledge, artists have so invariably failed in their attempts, as in representing Staffa; nor is there any class of rock to the right representation of which minute geological knowledge is so indispensable as the columnar ones. No artist, be his eye, his practice, and his patience what they may, can draw these rocks from nature, merely by copying what is before him; particularly in that case where they form causeways, so dazzling is their intricacy, and so inextricable their forms. If he attempts to construct them without the requisite knowledge, all truth of character, as well as all possibility of right position and relation disappears, and the drawings assume

that hideous air of regularity and falsity together, which we see in every representation of that place which has been made. All the arts and sciences mutually aid each other:—to a painter's necessary knowledge, I know of no limits: and even geology, I trust, may be rescued from some portion of the contempt which the crowd of its miserable cultivators has brought on it, when it shall have been raised to the dignity of a handmaid to the arts of design." The truth and justice of these remarks scarcely require corroboration. In order to obtain correct representations of the geological structure of the Channel Islands, the pencil of Nature has been employed in furnishing the originals for this work, the illustrations consisting of faithful copies from photographic pictures taken by the author.

The manner in which these experiments were pursued, on the occasion of one of the writer's visits to the islands in question, may have some interest to those who are acquainted with the beautiful results of the Calotype process. It was our first design to have employed the process for obtaining these pictures by the assistance of Mr. Fox Talbot's method. Paper for this process is thus made: good writing paper, or paper made for this purpose, is washed with nitrate of silver, and subsequently with iodide of potassium—

a process which leaves in the pores of the paper a pale yellow iodide of silver. Such paper is called "Iodised Paper." In order to render it sensitive to the light, a dilute solution of nitrate of silver, of glacial acetic acid, and of gallic acid, is smoothly applied to its surface. The paper is now capable of receiving luminous impressions. In order to effect this it is enclosed in a dark frame, and subsequently exposed for a minute or two to the picture formed at the back of a photographic camera obscura. A picture is now impressed on its surface. Yet, if the paper were examined in a room lighted with a yellow light, or by candle-light, no appearance of a picture would be visible. In order to make it visible, the paper is washed over again with a solution of gallic acid, and nitrate of silver, and acetic acid. It is then warmed over a basin of hot water, and as though by magic, the delicate and beautiful outlines of the picture begin to appear, until the whole scene is revealed with surprising brilliancy and effect, but all in contrasts: the sky is *black*, the foreground is *white*. This paper is then properly finished, and when laid on the surface of paper covered with a preparation of silver, and exposed to the sun, a picture is produced on the latter, precisely according to nature—the sky

white and the shadows black. In consequence, however, of the protection under which this process is preserved, it was not employed for the purpose in view.* A large number of experiments were made with another process of obtaining sun pictures, much more simple, but also much more uncertain than the Calotype. Among other results, a new photographic process was discovered by the writer, by means of which some pictures were obtained. Paper, on the surface of which a slight deposit of iodide of silver has been laid, is washed first with a dilute solution of nitrate of silver, and immediately before exposing in the camera with a solution of the *protonitrate of iron*. The remarkable part of this process is, that the pictures develop themselves without requiring a second wash. At first the paper is quite blank, but in a minute or two the picture begins to appear, and soon becomes beautifully distinct. This peculiar salt of iron has not hitherto been employed in the photographic art: possibly it may prove ultimately of value.† It is necessary, however, that the paper should be exposed while still wet, and this reduced us to the necessity of

* Since this was written, Mr. Talbot has withdrawn his patent rights as far as they relate to landscape photography.

† Experience has justified this anticipation, and the substance in question is now very largely used by photographers as a developing fluid.

contriving a portable dark room, in which the process could be carried on at the spot itself, where the view was to be taken. By means of a triangular tent made of glazed oil-cloth this was accomplished, and upon the most exposed situations in the broad sunshine of noon-day, a dark room was formed large enough to sit upright in, and to prepare the paper for taking the pictures. The difficulty, and indeed the danger, of carrying the apparatus down the sides of rugged and precipitous rocks, can scarcely be imagined. On the sea-shore in the bays, it was easy to pitch the tent and prepare the paper, and infinite surprise was excited by the operations necessary, among the few peasantry passing by. But among the rocks it became impossible, and a small room was hired near the coast, where, to the inconceivable wonder of the poor people who owned it, the photographic paper was prepared. The most serious inconvenience was experienced in consequence of the exceeding hygrometric state of the air near the sea-coast. The delicate equilibrium of the chemical ingredients on the paper, so essential to their susceptibility to the light, was thus annoyingly interfered with, and numberless disappointing failures were the result. For such an object, the daguerreotype is unquestionably the best form of photo-

graphic procedure. But the plates must be prepared on or near the spot, and developed as quickly as possible after the impression has been received on their surface. The grand and romantic scenery in many parts of these islands would afford a beautiful selection of subjects to a good daguerreist. It is gratifying to be able to add, that a most extensive series of daguerreotypes were ultimately taken by the writer, from which the engravings which illustrate the present work are copied.

Recurring now to the subject which has suggested these digressory—but it is hoped not useless—remarks, it is interesting to notice the operation of the principle laid down, that geological structure determines the character of a scene to a great extent. Mrs. Somerville makes the following just observations upon this point. “A difference in the composition and internal structure of a rock has a great influence upon its general form, and on the degree and manner in which it is worn by the weather. Thus, dolomite assumes generally the form of peaks like saw-teeth; crystalline schists assume the form of needles, as in the Alps; slates and quartziferous schists take the form of triangular pyramids; calcareous rocks a rounded shape; serpentine and trachyte are often twisted and crumpled; phonolites assume a pyramidal form;

dark walls, like those in Greenland, are of trap and basalt, and volcanoes are indicated by blunt cones and craters. Thus mountain peaks often indicate by their form their geological nature." The careful researches of M. Boué have also shown that on a broader scale the same is true, and that there is a very striking connexion between the physical geography (or external aspect) of different countries and their geological structure. By a minute comparison of the different parts of the land, M. Boué has shown that a critical similarity of outward forms, while indicating a similarity in the producing causes, must also to a large extent indicate identity of structure; and, therefore, from the external appearance of an unexplored country, its geological structure may be inferred, at least to a certain extent.

We are accustomed to regard the forms of different countries, as they are depicted on our maps, as without order or law. But the principle in question leads us to the remarkable and important conclusion, that, in the formation of different countries, in the more essential peculiarities of their contours, the Great Author of all Nature has not produced an indefinite number of types or models, but that, on the contrary, the fundamental types of form are very few. The whole of our land and sea, in fact, may be

decomposed into a less or greater number of masses, either exhibiting all their fundamental forms—which are derived from the action of definite constructive forces under the direction and control of the Mighty Creator—or merely a portion of them. It follows as a consequence of this fact, that analogy of form and contour throws the greatest light on the constitution of countries far removed from each other. Thus, as it has been aptly remarked, even the picturesque descriptions of a traveller often afford information of which he may himself be little aware.

Applying these remarks to the geology of the Channel Islands, it has been already observed that no one who has just left the alluvial districts of England, and visits these islands, can fail to be struck with the fact, that a strange difference exists between the scenery of the islands and that of the districts in question. Perhaps every person may not be able to account for the difference, or, in strictness, to describe it; but it is universally felt and recognised. What, then, is the difference? and what is its cause? The difference is simply this: the contour of the islands is that of a district composed exclusively of primary rocks, while that of the alluvial country is that exhibited by land appropriately called derived—that is, ob-

tained by the destruction of other rocks. The one is rugged, fantastic, gloomy-looking, precipitous, abrupt, and ungraceful. The contour of the other is rounded, smooth, gently rising and falling, and it is adorned with trees, and enlivened with quiet-flowing rivers and brooks of water. The cause of the difference lies in the nature of the constructive forces by which each district respectively was formed: the one, by some great convulsion of nature, was thrust up to its present height above the waters; the other appears to have been formed by the accumulating materials of the waste of other rocks in the course of many centuries. The one country is formed on the type of a country consisting of primary rocks; the other on that of one consisting of derived materials. To the geologist well acquainted with the forms assumed by different rocks, an easy, and oftentimes an accurate, means of obtaining geological information as to the structure of mountains or cliffs far distant is thus afforded. While, however, the principle holds good on the broad scale, it must not be relied upon where strict accuracy and local information of a precise kind is required.

The whole of the islands consist essentially of primary rocks, and, as this term may not be fully understood by some who read these pages,

it may be useful to explain its meaning. The term includes all those rocks which do not contain the fossil remains of animals or vegetables, and in the production of which the agency of an intense heat at some period is generally considered to have had a large share. Although the term has been properly objected to, and is now generally supplanted by a more definite and correct expression, it is still useful, as it is very widely understood. Sir C. Lyell proposes to call such rocks the "nether-formed," or Hypogenous, and they have been appropriately called by Humboldt "rocks formed from within," or endogenous. Their mode of formation is considered to be as follows. They are supposed to have been once in a fluid state, to which the agency of heat reduced them, and to have been forced up from beneath by some vast internal upheaving power. Granite and syenite, porphyry, greenstone, serpentine, trap, and many varieties of these rocks, belong to this series. But lying on the surface of these rocks, as a general rule, another series of rocks, also belonging to non-fossiliferous rocks, is met with. The rocks of the first series exhibit no trace of arrangement in the form of stratified beds. In other words, there is none of that appearance resembling the leaves of a book,—which is so conspicuous in many rocks in England, and

which serves to show that they were formed by the deposit of layer upon layer of the substance of the rock,—in a mass of granite. It is all solid, compact, crystalline, and homogeneous, or nearly so. But the rocks of the second series, still belonging to the rocks destitute of organic remains, and including gneiss, chlorite, hornblende, schists, &c., appear to have been formed from alterations taking place in the rocks belonging to the first series, and such rocks, often called metamorphic, exhibit traces of stratification. As a general rule, such rocks appear to be next in point of antiquity to those of the first series. After these, and generally overlying them,—in other countries, not in the Channel Islands,—are found rocks and beds containing various organic remains: and up to the surface itself such remains continue to be found, and in greater abundance. All those strata containing organic remains or fossils are considered to be newer than those of the first and second series, and it is deserving of especial notice, that no such strata are to be found in the Channel Islands. The older beds of stratified rock, and the granite, the most ancient of all, form their external structure. It is of rocks belonging to these two classes or series —the rocks of eruption, and the rocks formed by alteration of these rocks—that the Channel

Islands are composed. The consequence is, that there are no organic remains of any kind to be found. From this general definition of the geological character of these islands, which will enable the reader to obtain a clear outline of their structure, we may pass to the consideration of the geology of each of the more important of these islands.

Since the period when Alderney was visited by Dr. Macculloch, it does not appear that its geology has been carefully examined by scientific geologists; at any rate, such investigations, if they have been made, have not been published. The principal rocks entering into the composition of this island are porphyry, and a reddish grit. The latter is an aggregate formed from a detritus of granite, regularly varying in its texture and colour. At the north-east coast of the island, this rock is red and coarse-grained, but it becomes gradually whiter and of a finer texture toward the west till it ceases, resembling there the finest sandstone. It is stratified through its whole extent, in parallel and equal strata of about a foot in thickness. These strata are straight and continuous in most parts, and are almost every where inclined in an angle of 45° , dipping toward the east. Here and there some strata are of a more horizontal tendency. Their equality and the regularity of their position

give them in some places, where their edges are exposed, a form apparently so columnar that they might at a distance be mistaken for basalt: and when a succession of these ribs appear cropping through the grass, the appearance as of the skeleton of a mountain is exhibited. The lower portions of this rock are the whitest and finest. The stone is easily quarried, and breaks naturally into masses having their sides slightly inclined or absolutely rectangular. It is therefore well calculated for architectural purposes; and abundance might be procured at a small expense, very nearly adapted for square building without the assistance of the chisel. This rock exhibits a number of varieties in different places, dependent on the greater or less degree of metamorphic action to which it has been subjected. Where the strata of this rock cease, an inclined stratum of a black rock composed of hornblende and quartz is found. It is in some places accompanied by syenite. Red and purple limestone, sandstone, schist, and varieties of syenite are also found entering into the structure of the island, until we come to a mass of porphyry, of which the remainder is formed, and it is the broad and perpendicular fracture of this rock which causes the picturesque appearance of the western extremity of the island.

The geological structure of Guernsey differs from that of Alderney. It is almost entirely of granitic formation, the southern half, or thereabouts, of the island consisting of gneiss, and the north part exhibiting various kinds of granite and syenite. The town of St. Peter Port extends through a glen formed by the elevation of the beds of syenite and hornblende on the north side, and the commencement of the gneiss on the southern side. In the bed of this glen, intervening between the syenite and the gneiss, serpentine makes its appearance, and is found running beneath the town, in a direction eastward toward Castle Cornet, and skirting the syenite and hornblende rock near the port. The serpentine passes insensibly into a talcose schist, and with the others forms a transition into chlorite and greenstone. The high grounds of the south, as has just been observed, are composed of gneiss and other associated rocks of that series. The whole of this elevated portion of land may be considered as forming the bulk of the island. Granite, in all its varieties, prevails over the northern portion of the island. The western coast presents an uninterrupted band of syenitic rock to the ocean wave. Near the bays of Cobo and Albec this rock is found of a red colour, traversed by veins of epidote and richly coloured felspar. This rock is suc-

ceeded in the neighbourhood of Pleinmont by the grey and blue varieties. In some parts on this coast the rock is of the finest and most



ROCKS AT PLEINMONT, GUERNSEY.

brilliant quality, so much esteemed for the construction of national edifices and monuments, and it is here raised in blocks of considerable magnitude. Hornblende rock next follows, and it is found both in its amorphous and schistose structure extending along the east coast towards the town, the syenite only occasionally making its appearance where the

stratum is upraised. On the southern side of the island the alternations and passages of the intruding series of rocks which accompany the gneiss can be beautifully seen. In the neighbourhood of Torteval alternating lines of the dark strata may be seen traversing the cliffs of reddish gneiss, and in the bay of Bon Repos they are found in every possible state of disturbance. They are observed to issue from near this spot and intrude their dark streams into the main body of gneiss in all directions. The gneiss cliffs continue to range toward the western extremity of Guernsey, where they become less accessible to the rambler, but present from their summits many points of bold and picturesque scenery. The hills thus formed break into numerous slopes and glens, leading in a northerly direction, from whence are derived the tortuous valleys which diversify the interior of the island. These little glens are generally supplied with small and rapid streams, along the edges of which a green and teeming vegetation will generally be found. The termination of the hills and valleys on the western side opens into a succession of sandy bays, diversified and broken by several tongues of land and rocky eminences. Some of these bays are of considerable extent and continue for several miles, appearing in succession along this coast until

the first division of the island—of syenitic formation—is gained.*

The island of Herm resembles in the leading features of its geological structure that of



ROCKS ON THE COAST OF GUERNSEY.

Guernsey. On the northern coast is a sandy shore, protected by sand dunes alone, and proceeding southward, granite and syenite become visible, and have in fact been exposed by quarrying. Proceeding still southward, the meta-

* For most of these particulars relative to the geology of Guernsey, I am indebted to F. C. Lukis, Esq. F.S.A. Having gone over most of the ground described, I can corroborate the facts stated.

morphic rocks make their appearance. The south coast, like that of Guernsey, is abrupt and precipitous, and is constituted of gneissic rock. The rocks on this coast are in a greater state of disintegration than any we have met with in these islands. The whole surface of the rock for some distance is covered with a mass of debris and disintegrated material. We have detached pieces nearly a foot thick from the face of the rock, and with a slight blow crumbled them to powder. This renders it very perilous to attempt to climb them, and on one occasion we had a narrow escapé of falling from this cause. Having reached some height up the side of the rock, a precipitous part presented itself, which, before gaining the summit, must be ascended. At every step the broken surface crumbled down, and rendered a secure footing impossible. A ledge of rock on which standing-room was found, appeared ready to be detached from the face of the cliff. To ascend was impossible, and to descend appeared equally dangerous, as neither the hands nor feet could avail themselves of any sound part upon which a hold could be got. At length, by the assistance of some rock-plants, whose roots penetrated deep into the disintegrated mass, we were enabled to descend, and reaching the shore, gained the summit of the rock by a more circuitous and

safer route. The mineral products of this island will be presently noticed. Alternating with the syenite of Herm appears a rock which is allied to some varieties of the augite rocks of Scotland.

To the north-east of Herm lie several groups of rocks called the Anfroques. These rocks afford a singular spectacle when seen from the deck of the cutter on the passage from Sark to Guernsey. The rocks are not very high, but are remarkable for the resemblance they bear to the ruins of a city half buried in the waters. These rocks are considered to be granitic. Their appearance in this picturesque form, if such is the case, may be accounted for by the mass being divided by cleavage planes. This is a very common circumstance in rocks of a granitic structure, and portions of them often appear as if artificially arranged, from this cause. Sir H. De la Beche observes—"The cleavage of granite is generally such that the mass is divided into numerous short prisms with a rectangular face. These, when exposed to the action of the atmosphere, or that of the sea on coasts, frequently present the appearance of some huge ruin." Whether these rocks may present the same appearance on a closer inspection, I am unable to say, as they are not accessible to investigation, but seen in the distance it is difficult to

conceive the masses which rise above the sea to be of natural and not artificial construction. The powerful current which streams through the channel called "the Great Russell," must have a strong action against these rocks, which form the north-eastern boundary of this passage.

The island of Lihou contains some rocks of highly coloured gneiss, which are traversed by veins of felspar. Some singular excavations in these rocks, which have been, as it is said, used at a former period as baths, will again come under notice. Lihou is interesting in one respect to the geologist, as at the Guernsey side of the causeway which leads to it are evidences of a "raised beach."

The geology of the Isle of Sark is the most interesting of all, and attracted the particular attention of Dr. Macculloch, as it has also that of every geologist who has visited it. In consequence of the peculiar formation of this island, and its abrupt wall-like side, its structure is more perfectly exposed than that of the others. It has been already mentioned that Sark is a table-land, having no declivity to the sea at any part, except a small descent at its northern extremity. A general outline of the geology of this island is all that can be given, as it would demand a rigid investigation of its structure to enter minutely into the subject, and

geologists' accounts are discrepant about it. So far as we have been able to examine its structure, the following particulars may be relied on. Its northern and southern boundaries are composed of rocks of syenite or granite, and between these points a series of the metamorphic rocks make their appearance, constituting the main body of the island. Thus the primitive crystalline rock forms apparently a hollowed interval, in which are contained a large variety of rocks, derived from the alteration of the rocks, of the first series, or from intrusions into the former from below. At each extremity the original granitic rock appears unaltered. The rocks contained between these two points are remarkably diversified in their character. They comprise every mixture of micaceous schists with hornblende, actinolite, chlorite, talc, and potstone, and the frequent interchange of ingredients has caused, no doubt, much of the perplexity of the different geological accounts given of this island. The metamorphic influence also of the rocks which have been intruded into these schistose and argillaceous beds—that is, the alterations effected in their composition and structure by the forcible injection of igneous rocks into their mass—tends greatly to confuse the whole, and to produce combinations of an intricate kind. The western

parts of the island are composed chiefly of deposits of schistose and argillaceous rocks. On the eastern and north-eastern coasts large veins of trap and greenstone make their appearance. The most interesting part of the geology of this island is at the Port du Moulin. The descent to this place is extremely wild and picturesque, leading through a narrow pass of tall rocks down to the sea. Detached masses of rock surrounded by the sea, and relieved by the broad cliffs which bound it, constitute the peculiar feature of this port. The stratification of the rocks is here remarkably horizontal. They appear to be composed of a micaceous schist, and are occasionally intersected by veins of quartz. The rock in many places breaks into pieces well adapted for square masonry, to which purpose it is applied by the islanders. Near this spot is found the celebrated *lapis ollaris* or potstone, and in the land lying above the cliffs. This stone is singular in consequence of its properties of infusibility, softness, and tenacity. It is capable of being turned and cut in a lathe, and has been used for the purposes of domestic life from time immemorial. It is mentioned by Pliny as applicable to the formation of vessels of various kinds. From its use in this way its present name potstone is derived. The islanders of Sark avail them-

selves of this stone for the purpose of making various utensils. Near the celebrated pass—the Coupée, the geologist will also find much to interest him. In particular, there is at this spot a vein of porcelain clay, ten or twelve feet in thickness, and extending across the direction of this narrow ridge. This seam is rendered conspicuous even from Guernsey, in consequence of its whiteness, and the contrast between it and the dark rocks on either side of it. It is not white throughout, but is in many parts much contaminated by purple, red, and yellow oxides of iron. Veins of quartz also intersect it, and grains of the same mineral are found dispersed through it. Were there nothing else to distinguish this tall pass, the conspicuousness of the vein in question would render it the subject of attention to the most careless eye.

The island of Brechou, or L'Isle des Marchands, appears to consist chiefly of gneiss, and of the rocks belonging to that series. The lines of stratification are in many places very evident. The rocks are very abrupt and of singular form. Between this island and Sark is an isolated rock, the summit of which is covered with grass, and occasionally affords pasture to a few sheep. From its position, with reference to the latter island, it may be taken to consist

of the same rocks as the main land, from which it is separated by a short interval.

In a general view, the geological structure of Jersey may be described as that of an island, the greater part of whose high and northern tract consists of granitic rock, upon which the remainder of the island toward the south reposes. The granite or syenite, which has a pleasing reddish tint in some places, forms the lowest rock, and upon it an argillaceous and schistose series of rocks rest in a south-western direction; while toward the north-east a considerable mass of hornstone and conglomerate is found running. Veins of porphyry, and particularly of felspar, are also found intersecting the other strata in various places, and in a greater or less degree of decomposition, and variously tinged, green, red, and yellow. Beds of amygdaloid and green porphyry are also met with, and are quarried and employed for paving and in the construction of walls. The singular rock, conglomerate or pudding-stone, is found near Rozel Bay. It consists of rounded fragments of rock, cemented into a hard mass by a medium apparently of an argillaceous or clayey nature, with some traces of iron. To those who are not conversant with the formation of mineral substances, few objects can be more surprising and perplexing than the large masses -

of these rocks which form the coast line in this part of Jersey. A very fine rock of a similar nature is found in Boulay Bay, the mass of which is of a beautiful dark green. The well sunk in the tower hill of St. Helier's passes through about from forty to fifty feet of decomposed syenite, and beyond this to the depth of about two hundred feet in syenite in its fresh state.

In no part of any of these islands does there occur a fossiliferous bed. Lime is only discovered in small veins of ealeareous spar, seldom exceeding six inches in breadth, and found traversing some of the rocks of the gneiss series in Guernsey, or filling the cavities of the argillaceous strata in Jersey. In some places in Guernsey scanty and insignificant portions of the recent formations may be found dispersed upon the surface; but of organic remains, in the sense in which that term is properly understood, there are none.

The mineralogy of these islands is interesting; but in consequence of the almost endless intermixtures and combinations of the simple minerals in the various rocks and veins, it is also complicated. There are a number of varieties of granite found in the various quarries worked on the northern coast. The composition of this rock, it may scarcely need to be said, consists

of variable proportions of the minerals called felspar, quartz, and mica, and these are intimately blended together. Felspar is usually the predominating rock. Of the mixtures of these three ingredients in varying relative quantities, the granite of these islands, properly so called, is composed. From this variation in the relative proportion of its ingredients arises the difference in the brilliancy, texture, and colour of the rock. These minerals are generally united in what is termed a confused crystallization; that is to say, there is no regular arrangement of the crystals in ordinary granite; but a singular variety is sometimes met with, and exists in the rocks of the northern coast of Guernsey, which is termed, from its remarkable appearance, graphic granite. It is found chiefly in veins.* It is a compound of felspar and quartz, so arranged as to produce an imperfect laminar structure. The crystals of felspar appear to have been first formed, leaving between them the space now occupied by the darker-coloured quartz. This curious mineral presents nothing unusual when a section is made perpendicularly; but, when cut at right angles to the alternate plates of felspar and quartz, it presents broken lines which bear a singular resemblance to Hebrew characters.

* Lyell, Elements of Geology.

The term syenite has been repeatedly employed in the present chapter, and it becomes desirable to give precision to its tenor. The name is derived from the ancient Egyptian quarries of Syene, which yielded this rock in splendid masses. It is a variety of granite in which the mica is replaced, or almost replaced, by a mineral called hornblende. This rock is occasionally coloured of a beautiful red, as in that raised from the quarries of Mont Mado in Jersey, and is on this account a valuable stone for ornamental architecture.* Veins of the mineral called epidote, and of red horn-stone porphyry, are found in the mass. A few specks of iron and copper pyrites and titanium have also been found dispersed in the rocks; otherwise, metallic indications are rare.

The mineral called hornblende, with other rocks of the series to which it belongs, forms an important part of the geology of these islands. It is characterised by its dark green or velvet black colour, its peculiar form of crystallization, and its shining lustre. Hornblende rock, also often called amphibolite, is composed of this mineral united with felspar. A variety of this kind is found in some parts in these islands, in which the short crystals of the hornblende,

* The beautiful red granite of which the Egyptian statues and other sculptures are made is a syenite of this description.

being disposed at opposite angles, form spots as though the stone had been sprinkled by a passing shower. Stone of this description is called by the Guernsey masons Talvaen, pronounced Talvawne.

Associated with the hornblende rock is a rock called greenstone. It is composed of hornblende and felspar, the latter in a more or less highly crystalline condition. Chlorite occurs united with hornblende, and narrow beds of chlorite schist are also found. This is a green slaty rock, often associated with, and graduating into gneiss.

Gneiss, a rock forming so large and conspicuous a portion of these islands, also demands our notice. It is a mineral formed of the same ingredients as granite, but with this remarkable difference, that, instead of being arranged, as in the latter, in a crystalline mass, they are arranged in layers; in other words, gneiss is a stratified rock, composed of felspar, quartz, and mica. Its white layers consist almost exclusively of granular felspar; the dark layers, of grey quartz and black mica. Many varieties of this mineral are met with. In some, the stratification is perfect; in others, it is scarcely apparent. It is also met with of a red colour.

Traversing the gneiss, and often alternating with it, is the rock called trap. This rock

forms the singular veins before alluded to as intruding into the other rocks on the coast. The name trap is derived from its often assuming the form of terraces or steps, from a Swedish term, *trappa*, signifying a flight of steps. Strata of quartz rock are also found in many places, traversing the gneiss, and the rocks associated in that series.

Mr. Curtis has drawn up the following list of minerals found in the gneissic district of Guernsey, and the names will have a tolerably general application to most of the other localities :—“ Sulphate of iron, mundic, specular iron ore, sulphuret of copper, black and green carbonate of copper, carbonate of iron, grey iron ore, brown and pearl spar, sulphuret of lead, carbonate of lead, sulphuret of manganese, epidote, chlorite, actinolite, prehonite, steatite, asbestos, talc passing into lapis ollaris, or pot-stone.”

The islands of Herm and Sark afford the most interesting study to the mineralogist. In both these isles mines of silver, copper, and lead have been worked. In Sark particularly a large number of mineral veins exist; but no attempt at their exploration was made until 1834; a short time previous, a mineral lode having been discovered at a place called the *Pot*. But a very curious circumstance occurred

a short time after the diseovery of this metalliferous vein. A gentleman being at the south-western part of the island rabbit-shooting, shot one of these little animals near the edge of the cliff, over which it fell. A man was sent to look for the rabbit, and he brought up in addition several stones exhibiting glittering metallic indieations. After a little search the vein was diseovered standing quite out of the cliff: the surrounding rock being more easily acted on by the waters and chemical influencee of the air than it, wasted away around it, leaving the metalliferous vein untouched. Mr. Darwin relates in almost the same terms the diseovery of the luerative silver mines of Chanuneillo, from whieh silver to the value of many hundred thousand pounds has been raised in the eourse of a few years. A man, in that instance, threw a stone at his loaded mule, and, thinking it very heavy, he pieked it up, and found it rieh in pure silver. By a little serutiny the vein was diseovered close by, standing up like a wedge of metal.

The vein thus discovered was speedily worked, and received the name of Sark's Hope. A landing place for vessels was formed, a road to the newly-discovered mine was made, shafts were sunk, steam-engines erected, with the neecessary machinery, for the preparation of the

ore, and the once almost forsaken island of Sark was made lively and bustling with the presence of the miners, and the noise of the engines and machinery. One of the galleries of this mine was driven three hundred feet under the sea. The rock is a very hard syenite, except near the lode, where it is decomposed to a greater or less degree. The minerals found in this mine comprise the following compounds:—Carbonate of copper, phosphate of lead, carbonate, sulphate, and sulphuret of lead, antimoniferous galena, chloride and sulphuret of silver, sulphuret of silver and antimony, and copper, &c. On our first visit to these islands, in 1845, these mines were in full operation; and up to that period many tons of lead had been raised, and the total yield of silver amounted to twenty-five thousand ounees. Shortly afterwards, however, the works were abandoned, the existing steam power not being sufficient for the proper drainage of the mine; and, it being thought not desirable to incur the expense of a larger engine, the whole works were given up, and they now present a most wild and desolate appearance. At the present time no mines are worked in any part of the island. That numerous metalliferous lodes exist in other parts of Sark is fully believed by many mineralogists, and it is possible that the experiment of working them may again be made.

A valuable copper lode was found in the island of Brechou, (L'Ile des Marchands,) and was attempted to be worked, but the land-springs proved so strong as to cause the attempt to be abandoned. On the eastern and western coasts of Herm, mining operations have also been carried on, and shafts have been sunk ; but in no instance as yet has the attempt been a profitable one. The cost of fuel, and the wild and remote regions in which these operations must be carried on, seem to render the prospect of these mines being again opened an unpromising one.

Before concluding the present chapter, it may be interesting to add a few particulars relative to the stone quarries of the Channel Islands, which have yielded and continue to supply large quantities of the most valuable qualities for architectural purposes, paving, &c.

The island of Herm contains a supply of granite almost inexhaustible. On that part of the island which lies over against Guernsey the granite rocks exist, and there extensive quarries have been formed. Not far from the quarries there is a pier, which protects a small harbour in which the vessels conveying the stone used to anchor. This harbour was constructed at the expense of a Mr. Duncan, and vessels of 250 tons burden could load in it, even in

boisterous weather, with the greatest safety. From the quarries to the pier an iron tramway was laid down, and as much as 600 tons of granite a-day could by this means be shipped for exportation. Mr. Duncan also built houses for 400 workmen, an inn, a brewery, and a bakehouse, and several forges for making and repairing the implements used in the quarries. The granite could be raised in very large blocks, some of them exceeding, it is said, one hundred tons in weight. The stone was of the most excellent quality for all building purposes. A large mass of it was once required for a public monument. The colour desired could not be obtained at the quarries at Herm, and men were sent to search over the island in order to obtain a mass fit for such a purpose. Except in one situation, no mass of stone sufficiently good could be found; and it became necessary to remove a very large stone, which, with some others in a confused heap, formed a cluster, long but incorrectly supposed to have been Druidical remains. This large stone, having long formed a conspicuous object from the sea, and assisting mariners in ascertaining their bearings, could not be removed without permission of the States. This was granted on condition that an object equally conspicuous should be reared on exactly the

same site. The large stone was accordingly removed for the monument, and in its place a curious stone pillar was built. At the base of this pillar is a little recess, which appears to be occasionally used for shelter by animals. Large stones lie all around this spot, which are becoming half buried by the sand raised up in dunes along this coast, and which in time will bury the pillar also, unless means for its prevention are taken. This might easily be accomplished by encouraging the growth of the *arenaria*, &c., which grows near there in abundance.

The granite, of which large quantities have been exported, is of a brilliant bluish grey colour. This colour gives to houses built with it a peculiarly stern, cold, and forbidding aspect. The town of St. Peter Port is built of granite of this colour, and it is difficult to forget the chill and ghastly look worn by these solid and stern houses of the town seen in the grey light of early day. The warm tone of our brick-built houses, or the sprightly one of our stuccoed dwellings, glittering with white or yellow paint, renders the appearance of these granite buildings, which seem as if they would last out all time, the more unwelcome. Its properties are very remarkable. It resists the action of atmospheric influences for an amazing period.

Houses which have been built several hundred years of it in Guernsey are little altered in appearance at the present day, and have lost none of their ancient solidity. The lettering cut in the ancient arch over the doorway is almost as clear and sharp in 1850, as it was in 1649, when it was executed. The slightest marks of the chisel are scarcely effaced. In addition to its excellent property of resisting the weather, it is extremely hard and ponderous, and consequently resists friction and wear of all kinds. A table of the relative power of resisting wear, and of the weight, &c. of different kinds of granite, was published some years ago in the Mining Journal, from which a few particulars may be taken. Several masses of stone obtained from different quarries were laid down in the road leading to the East and West India Docks, in London. The test thus applied was one of the most severe that can be conceived. On this road some of the heaviest laden wagons in the kingdom are almost incessantly passing, and the friction, pressure, and destructive effects of such vehicles may readily be imagined. After a trial of seventeen months, the stones were taken up, and their loss in weight ascertained. The following was the remarkable result. While granite from Guernsey and Herm lost during this period, per superficial foot, respcc-

tively, four pounds and a half, and five pounds and a half, granite from Dartmoor lost twelve pounds and a half, and from Aberdeen, a mass of the blue granite lost, per superficial foot, fourteen pounds and three-quarters. Thus the granites of Guernsey and Herm last rather more than three times as long as that from Aberdeen. The durability of the same stones has also been proved by their being laid down in the greatest thoroughfare in the world, that of Cheapside. The chief excellency of this granite is said to consist in its wearing down rough, and not becoming smooth by friction, probably in consequence of the superior density of some of its component parts to that of others. Experiments have also been made with the hydraulic press on this important subject with a view to ascertain the best stone for building purposes. A pressure of upwards of six tons on each square inch of Herm granite was requisite in order to crush this obdurate stone, while at a pressure of rather more than three tons on the same surface, granite from Penrhyn, in Cornwall, crumbled into powder. The quarries of Herm fell subsequently into the hands of a Company, and were for a time carried on with vigour, and the little island began to assume a lively aspect with its then pretty extensive population;

schools were established, and divine service was regularly attended. They have, however, lately been relinquished; the quarries are deserted, numbers of houses—some of which in the midst of their desolation look strangely, adorned with such titles as “Hyde Park Corner”—are vacant; the population consists of a few fishermen and their families, and the island is resorted to only occasionally by the conchologist or the traveller.

In Guernsey extensive quarries of the same kind of granite are still in operation. These lie on the flat northern coast of the island, and yield much stone for exportation to London. It is said that a former quarryman at these quarries raised himself in London to the dignity of Lord Mayor by his persevering industry and knowledge of the qualities of the stone, and of the island. There are several varieties of granite raised, some more, some less ornamental in their character.

In Jersey, the celebrated quarries of Mont Mado have long yielded most valuable stone for architectural purposes. The rock is granitic in its character, but differs in some respects from that of Herm and Guernsey. It naturally separates into distinct masses, forming blocks of considerable size, more or less prismatic in

form. The stone is of a close and small grain, and is extremely valuable for all purposes where great solidity and important powers of resisting wear and weather are required. It does not, however, appear to resist these destructive forces as much as the granite of Herm and Guernsey, which is due to a slight variation in the proportions of its chemical constituents.

From the fact already stated of the structure of these islands consisting essentially of granitic rocks, it is very interesting to inquire into the phenomena which have led to the production of a friable and fertile soil on the surface of such hard and resisting materials. And many places exist in which this process of the formation of the soil can be traced even at the present day. In order to render this subject clearly intelligible, it may be just necessary to remind the reader that in the valleys and on the plains of England the soil is very generally derived from the waste of some distant mountainous part, and has been deposited by water. Such soil is called alluvial. It lies just beneath a thin stratum composed of vegetable matters in a state of decay, and it consists of sand, gravel, stones, and fine sediment or mud, all of them the products of clemental disintegration of elevated rocks or mountainous districts in

other places, and borne thither by rivers and floods. The vegetable soil, on the other hand, is of purely local origin. It is produced by the decay of successive generations of plants, dying on the spot where they came to live, and once luxuriantly flourished. Ordinary alluvial soil,—that is, the soil in which we sow, plant, dig, and plough,—the soil of our fields and orchards in England, has generally a remote and a proximate origin; the remote dependent on the chemical and mechanical destruction effected by the air and water on rocks and mountains, and the proximate on the exercise of the same agents upon the tender tissues of plants, and occasionally of animals also.

In the Channel Islands this remarkable difference in the formation of the soil exists, that it is wholly of local origin, or nearly so. On all the more elevated portions it is unquestionably local in its character, but in the low-lying portions a thin layer of alluvial soil exists, which has been washed down from the higher parts. It has often formed a pleasing occupation for the naturalist, to endeavour to account for the production of soil and a suitable bed for plants upon a rock just raised from the waters which had previously covered it; and the Channel Islands present a real example of

the production of such a soil. This process may be considered of as going on in the following manner:—When a surface of rock is exposed to the air, and also to the water, a slow and gentle act of chemical decomposition is set up. By this act the forces which bind the particles of the rock together into a solid mass are gradually loosened, and the elementary substances of which they consisted undergo a new arrangement. This goes on much more rapidly if the rock is fissured, and in that manner exposed to some depth to the action of percolating water; otherwise it is very slow and gradual; but it is progressive, and ultimately the upper portion of such a rock becomes friable, or even pulverulent. The changes in question still proceed, and penetrate for some feet into what was previously an impenetrable stony mass, apparently capable of resisting all outward violence for an indefinite period. A rough mineral soil is thus in the end produced; and though full of stones of various sizes, and apparently offering little promise of fertility to the agriculturist, it is really the basis of a very fruitful land. Long prior to this, however, the seeds of plants have been lodged in it, carried thither by numerous agents,—the wind, animals, birds, or man himself. They take root, pene-

trating into the minutest crevices of the disintegrating mass, flourish, live out their allotted seasons, and die. Immediately on their death decay commences, and only ceases when it has reduced stalks, leaves, and wood to a brown powdery substance, called *humus*. Such is the

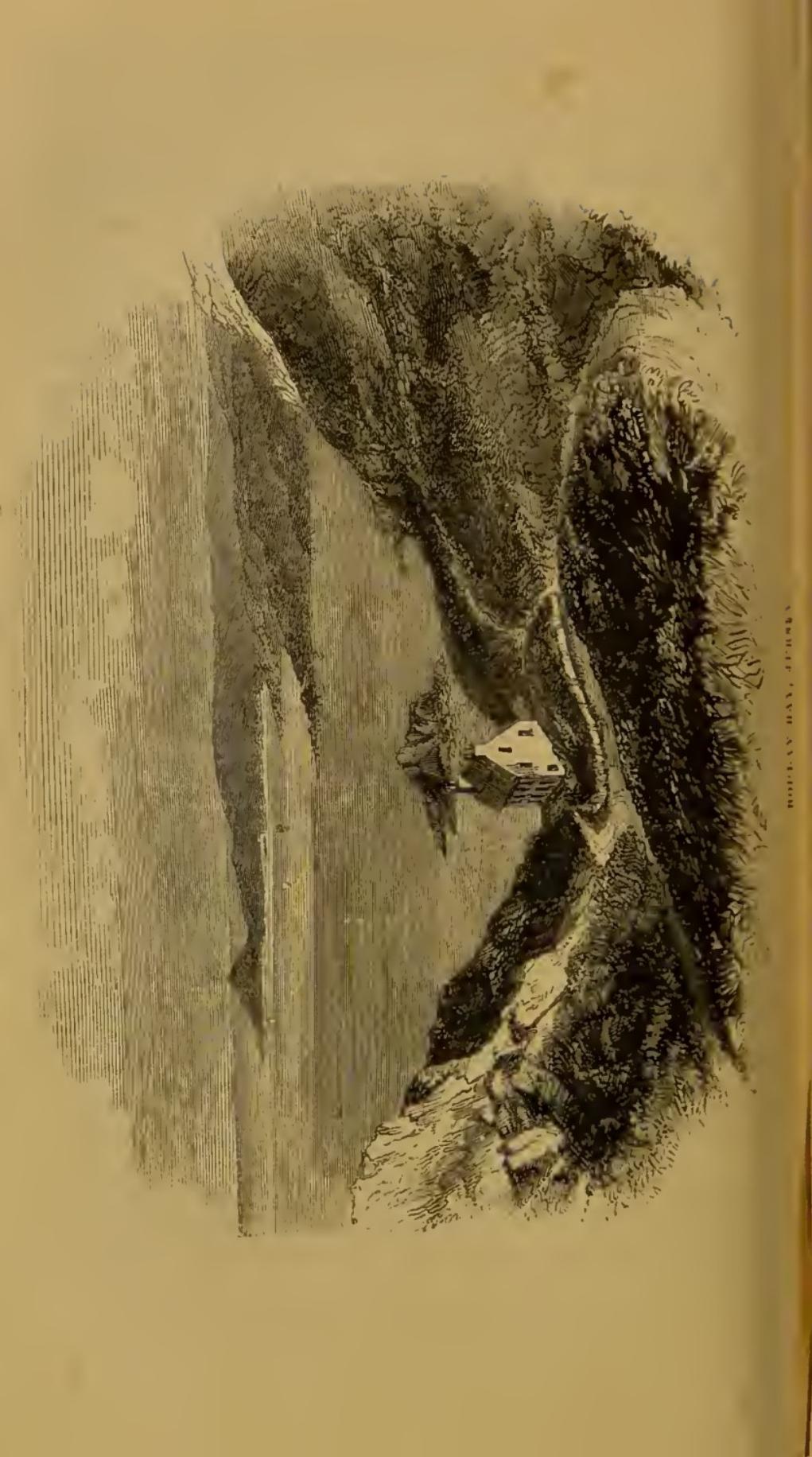


origin of the vegetable soil; and it is now merely necessary to suppose those agents long continuing in force in the work of destruction, and also of reproduction, to have a clear outline of the manner in which such a soil has been produced.

In numerous places in these islands the present activity of these causes can be plainly beheld. By standing on the shore where, as in the scene represented above, the rocks rise abruptly above the spectator, it is possible by the eye to trace the gradual disintegration of the surface of the rock from above downwards, until the eye rests on a solid wall-like mass, as yet little affected by the change. Inland the same may also be witnessed in many parts where a natural fault exists, or where man has cut through the rock for the construction of roads. On the surface of such sections will be seen a thin layer of vegetable mould, supporting numerous plants; a little lower down, the mass is composed of angular fragments of rock, of small size; still lower, these fragments are of greater dimensions, deeper down, the rock is merely fissured; whilst at the bottom, a depth of perhaps fifteen feet from the surface, the structure of the rock is still unaffected and entire.

It is not necessary to produce instances in other districts of the real power of such gently acting causes as we have described; for the fact of their operation, and also of the magnitude of the results they produce, is admitted by all who have thought on this subject. Such

evidences of the power of chemical and mechanical forces, acting through long periods on atom after atom of granite or its associate rocks, until their surface is literally broken up into a powder, are interesting illustrations of a well-known natural law, that the greatest effects often arise from causes of slow operation, and whose immediate results are apparently insignificant.



CHAPTER IV.

THE BAYS.

"Here in a royal bed the waters sleep ;
When tired at sea, within this bay they creep."

DRYDEN.

ONE of those features of the natural scenery of these islands which have rendered them celebrated to the tourist, is the existence of an almost incredible number of beautiful and generally minute bays. Perhaps no country in the world can exhibit so large a number within the same area ; and the diversity thus given to the scenery is very pleasing and picturesque. The bays of Jersey and Guernsey are the most numerous and the most beautiful ; but even in Sark, all hemmed in as it is by steep and inaccessible rocks, minute bays are here and there found, across which a child might easily throw a stone. The bays of Herm are flat and spacious. The existence of this feature in the scenery of the Channel Islands is unquestionably dependent upon some definable cause. Most probably it is due to the peculiar formation of the islands,—to the fact that the fundamental

rock is granite, and the overlying rocks are all of the dense, compact, and durable character of metamorphic rocks in general. A few considerations will render this more apparent. The position of these islands in the midst of a powerful tidal current, and the fact that the great Atlantic wave is propelled against them with a force but little diminished from its having entered the Channel, deserves particular notice when we seek to account for the peculiarities of its coast line. The comparative durability also of the rocks which form it, their chemical composition, and their mechanical structure, should be borne in mind would we inquire into the effect of such a position upon these islands. It will be again necessary for us to remark upon the waste of the coast by the incessant action of the sea and its restless currents; but in the meanwhile it may be observed, that this is very much determined, not alone as to its extent, but as to the form it assumes, by the greater or less resistance of the materials operated upon. The existence of a number of minute bays having strictly defined outlines can nowhere be pointed out in an island the coast of which is composed of alluvial matter, or of the ordinary materials composing fossiliferous strata. The formation of a bay in the coast of an island situated like that of

Guernsey, or any other of this group, depends upon the projection into the sea of a tongue of land which, if it were not composed of long-enduring materials, would in a few years be devoured by the turbulent waters sweeping past it, and the distinctive outline of a bay would thus be for ever lost. In the place of an island formed of granitic rocks, let it be conceived that an island of chalk were exposed to the destroying force of the tidal currents. The coast line of such an island would be hollowed here and there, but its general outline would be smooth and rounded. Such a bay as Fermain Bay, in Guernsey, or any of the bays on the northern and north-eastern coast of Jersey, would never be found in such a spot. The perpetual waste caused by the sea would obliterate every outstanding portion of land, and if bays were formed, their outlines would soon be destroyed, and the rounded contour become again predominant.

When, therefore, it is inquired, what is the cause of the formation and of the persistance of form of the bays of the Channel Islands, the most satisfactory reply appears to be, that they depend upon the position of the islands in the midst of a turbulent tide, and upon the obduracy of some of the rocks entering into their geological composition, and partly also upon

the rugged and broken outline presented by the primitive rocks on their first upheaval. The formation of many of these bays may have taken place under the following circumstances. An original chasm between two rocks existed, and was widened by the action of the elements. A softer portion of the strata lying between the sides of this chasm yielded with greater readiness than the extreme points and sides themselves to the wasting influence of the sea. Thus a bay was produced, the sides of which were of a more enduring nature than the centre, and remained little altered by the waves, notwithstanding their unceasing action upon them. Such a bay might increase in depth and slightly in width, but its outlines would long remain the same, and only yield after the lapse of an immense interval to the destructive violence of the current, and even then the tongues of rock forming its sides would be broken up into jagged masses, almost as effectually preserving the form of the bay as though in their original rampart-like state.

Another circumstance tending in a great degree to produce and to enlarge the little coves and inlets of various forms, which render these islands so attractive, is the existence of a rapid little stream, which may generally be found running through the centre of each into the

sea. The action of water in these instances may be trifling so far as its mechanical effects are concerned, but its chemical effects are important, and a vast amount of disintegration of solid rock may be produced by a little stream only a few inches in depth, and scarcely a foot in width.

If the explanation thus given of the production of these bays and coves be correct, we should expect to find in any islands similarly placed with them, and of a similar constitution, the same results. The Shetland Isles may be taken as affording an illustration of this subject. Like the Channel Islands, their geological basis is a primitive rock. Granite, syenite, gneiss, and porphyry, form the principal constituent rocks of the coast. A superficial survey of the excellent map of these isles drawn by Dr. Hibbert reveals the fact, that wherever the coast is exposed to the conflicting currents of the tides, it is eaten away into creeks, coves, and inlets well-nigh innumerable. Where, however, the full force of the Atlantic wave falls, as on the western coast, the appearance of coves and bays is not to be met with; the tremendous force of the surge beating against this coast grinds down even the granite rock of which it is composed, and levels the whole line. Where the tidal current flows in conflicting eddies and streams, and where the wasting force of the

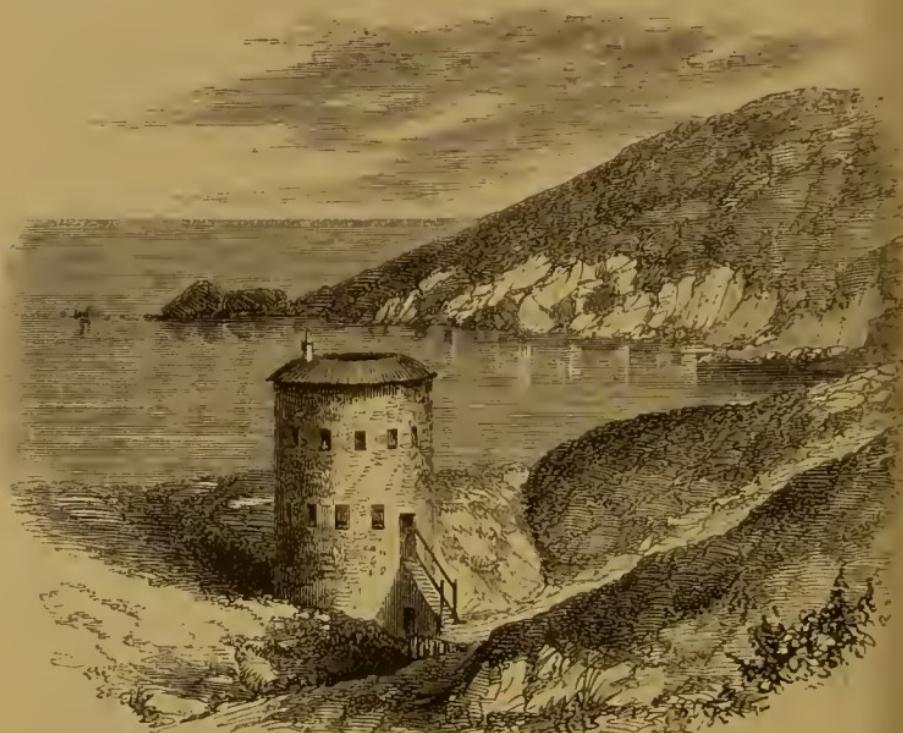
sea is opposed by strata of various degrees of durability, there are to be found the Voes, bays, friths and sounds, the number of which, named and not named, exceeds belief. The number and peculiarities of these indentations of the coast has in the Shetland Isles given rise to several different terms applicable to them.

"The name of Voe," observes Dr. Hibbert, "from the Scandinavian Voge, is given to a narrow inlet of the sea of moderate extent; but to an estuary of considerable width the common English term of Bay is applied. An inlet of diminutive size is called a Gio, or Geo, from the Scandinavian Gea. Some idea, though certainly an incomplete one, may be formed of the comparative magnitude of a Voe and a Geo, by supposing that the former, if deep enough, is capable, from its width, of affording a harbour for ships, but that the latter is, from its narrowness, only proper for boats. There is still another small inlet of the sea distinguished by the Shetlanders as being more open than the Geo; it is named a Bite, the word having been probably derived from the popular phrases of English and Seoteh sailors, among whom I have occasionally heard it used. The Bite of the Shetland shores is nothing more than the Latinized expression of indentation of the coast." If the following sentence had been applied to

many parts of the Channel Islands, instead of the Shetland Isles, it could not have been more correctly descriptive of their features:—"From this point of rock, as we cast our eyes to the north, an extensive view of the country is exhibited; yet nothing is to be observed but the most frequent constituents of Shetland scenery—*islets, holms, creeks, precipices, and a long line of rugged coast.*" Of each and the whole of these varieties of coast indentation which have been distinguished by the Shetlanders, examples may be found in various parts of these islands. That a powerful tidal current scours the shores of these islands of the north,—one of them the Ultima Thule of Agricola, needs scarcely to be said, when their position is remembered; and that, though in a somewhat less degree, a similarly powerful stream sweeps around the Channel Islands, it remains for us in another place to show. We have entered at some length into this subject, because we are anxious to give to any one who may visit these islands a precise clue to their physical peculiarities, and to render their scenery not merely attractive but instructive also.

The beautiful little bay situated at a short distance from the town of St. Peter Port, in Guernsey, called Fermain Bay, is an exact type of the Shetland Voe. The line of the water's

edge is almost straight from one side of the bay to the opposite. At each side the waters contend with rugged and perpendicular walls of rock, against the sides of which their force seems expended in vain. The bay is protected on each side toward the sea by a long but uneven



FERMAIN BAY, GUERNSEY.

ledge of broken rocks; these project some distance into the waters, and to a considerable extent protect the bay from the influx of those tumultuous waters which often rise between it and the opposite coast of Sark. The descent to the bay is through a steep but extremely beautiful glen, down the sides of which the

road winds in a serpentine direction. A little rill runs down the middle of this glen, and burying itself among the pebbles in the beach, passes invisibly to join the waters of the sea. The lower part of the shore consists of a fine white sand, which gives a peculiar brilliancy to the clear waters overlying it. Above this the beach is formed of rolled pebbles. A Martello tower defends the bay, and together with a battery and rampart renders hostile access by this bay extremely difficult. Upon the shore of Fermain Bay we made our first out-of-door photographic experiment. The appearance of the camera obscura, the tripod on which it was supported, and particularly the ingress and egress of the operator out of the curious tent, with the photographic papers prepared on the spot,—all formed an exhaustless theme of wonder to some of the islanders, who were wholly at a loss to comprehend the matter in hand. The view of Sark is very beautiful as the glen is descended. A life-boat is kept near the Martello tower; and one or two boats are commonly seen gently gliding from one point to another, bearing persons anxious to examine into the scenery of the rocks around.

Moulin Huet—of the rocks defending the entrance to which we have before spoken—is one of the most extensive of the bays in Guernsey, and

affords an endless variety of beautiful scenery. Its projecting rampart of rocks contracts and defends the entrance of this bay, which is much more exposed to the fury of the Atlantic than the former. The spot from whence the photograph of those rocks was taken forms a kind of watch post, and contains one or two rusty and dismounted cannon. The cliffs forming the sides of this bay are in many places quite perpendicular, and as smooth as a wall; in others, they actually appear as if nodding to their fall. We found several places in which a mixture of iron with the other constituents of the rock was hastening its destruction. No term can better express the state of the cliffs forming the curve of the bay than that of indentation. The whole coast appears bitten out. Ledges of uneven rock project into the waters at intervals of a few yards, leaving little creeks and narrow passages of great intricacy. When the tide is rising, and the pedestrian's access to a smoother part of the bay is intercepted by the waters surrounding the seaward edges of these masses of rock, escape is difficult, and in some places might be impossible. Caves of various kinds are also seen on this part of the coast, and one in particular demands our more particular consideration. The water in the bay contains many sunken and exposed rocks.

Whether the inhabitants of the other islands will allow it or not, we think there can be no question that Petit Bo bay, in Guernsey, is the most beautiful of all those beautiful inlets in the Channel Islands. This bay opens into the sea at the termination of a narrow glen, one of the sides of which is formed of abrupt and uneven rocks. A little stream runs down the ravine, appears among the pebbles of the upper part of the beach, and then becomes lost, appearing only when the tide is low in the form of narrow bands of water, rising through the sand, and then losing itself again in the sea. A wall, partly natural and partly artificial, through which a narrow entrance is made, guards the upper part of the beach, with a Martello tower at a little distance, on a gentle rising. On the summit of a bold mass of rock at one side of the bay, a fortification exists, which commands the whole bay. The scenery to the north-east of this spot is extremely fine. The bold outlines of the rocks at Moulin Huet, with the fantastic architecture of those nearer at hand, and the blue stretch of the water, filling in every creek, and adapting itself to all the ruggedness of the coast line, form a picture composed of beautiful elements, and arranged so as to produce the best effect. Some of the rocks forming the sides of this bay have a pecu-



liarly grand appearance. Their sides are vertical, and they plunge without a break into the pure and transparent waters below, their hard outlines being distinctly visible below the surface. This wall-like conformation, when two rocks stand close together, produces a deep chasm, at the bottom of which the occasional foaming of the resisted waters may be seen. The waves, in some places, roll under the edges of the rock, and their muffled fall as they strike the end of the cleft produces a singular impression on the ear of the observer. There are several eaves extending to a small depth in the rock at the side of this bay; and the naturalist will here find, both in them and among the rocks which surround the bay, plants, animals, and shells, to the special consideration of which another place must be devoted.

Rocquaine Bay, on the western coast of the same island, presents a contrast, in many points remarkable, to the last-named bay. A little beyond Pleinmont the abrupt coast-line of rocks suddenly ceases, and from the summit of the last rock a beautiful panoramic view of this bay is gained. It stretches out at the feet of the observer in a beautiful curve, terminating on the opposite side in a rocky promontory, separated by a small interval from the island of Lihou. The engraving on the last page represents cor-

reely the principal features in this scene. The bay is defended by two round batteries at each side, and a low fortification at its entrance. Perhaps its best defences are the array of formidable rocks which are studded about its waters, and which, at low tide, give an aspect of frightful ruggedness to many parts of the bay, which, at full water, appears safe and enticing. The whole outline of the islet of Lihou is here visible, and its wild and desolate position may be imagined. The idea is also suggested by the masses of rock which protrude above the waters at low tide, whether the whole bay, now given over to the dominion of the waves, was not at some former period dry, and perhaps fertile land. But this is an inquiry to which the circumstances observed in connexion with a bay a little to the north of this, more particularly invite consideration. Upon some grass at the foot of the rock on which we stood while surveying this coast, many loads of sea-weed, which is called Vraic, were spread out to dry; and the same appearance is to be seen in many parts along this coast, where it grows in great luxuriance.

To the geologist Vazon Bay appears one of the most interesting bays in Guernsey, but there is little in its conformation to attract the attention or deserve the notice of the mere

seeker after beauty. After crossing a pebbly beach, the shore becomes sandy, and is remarkably free from those rocky protuberances which render the shores of other bays so formidable. Some wild rocks guard its northern boundary, but these are chiefly distinguishable for their irregularity and ruggedness, as they are of insignificant height. In order to obtain an idea of its geological interest, Vazon Bay should be visited at the lowest spring tide, when occasionally a singular spectacle is beheld. The ebbing of the tide is awaited by parties of the islanders, who are provided with iron rods, hoes, and spades. So soon as it has receded sufficiently far, the bottom is probed with the rods, until certain indications of the existence of the object of their search are met with. A circular pit is then rapidly dug out and carried down until the diggers encounter a mass of *peat*. They then cut the mass into square pieces and fling it out of the pit, and it is carried away by women, boys, girls, or carts, beyond the reach of the waters. The diggers work with all their strength, for they are aware of the shortness of their time of labour, and a considerable quantity of peat is excavated. The sure-returning waters begin to tend land-ward; the pit begins to stream with water soaking through the porous beach; yet, while a moment may be

snatched from the tide, the diggers are hard at work ; and it is only when resistance to the overflowing waters is altogether vain, or even dangerous, that they abandon the spot, which speedily becomes obliterated with the return of the tide.

This substance has been known to exist beneath the sands of this bay for a considerable period, but it is not in any place visible on the surface. It forms a useful fuel, and has received the singular scriptural title of Corban, or Gorban —a gift. In an able letter, addressed to a local paper, Mr. Lukis has detailed some very remarkable and interesting facts in relation to this substance and the part of the island in which it has been found. A violent gale occurring early in the month of December 1847, at the time of the spring-tide, caused the peat-bed to break up at its sea-weed edge ; and masses of this substance were observed driving up towards the land at the flowing of the tide. The alluvial bed of sand and gravel on which the bed of peat reposes became exposed to the fury of the waves at low water, and this being partly removed, the bed of peat was lifted like an ice-floe, and carried to the land by the force of the waves. Its appearance was truly interesting. “ Trunks of full-sized trees, which once grew on the spot from whence the waves were now for the first time dislodging them, accompanied

by the meadow-plants which ornamented their grassy habitation; roots of rushes and weeds, surrounded by those of grasses and mosses, gave evidence of the luxuriance of the locality. The very perfect state in which the trees were found shows that they had been for a long time buried under sand. The compression of their trunks and boughs exhibits the first indication of that flattening of the form which plants undergo under such circumstances. The trees, when uncovered by the sand and gravel which form the bed of the sea, were covered with corallines, fuci, and sertulariæ. Some of the trees and portions of the boughs having been separated by the fury of the gale from the peat-bed in which they had been contained, were driven to land, and gave rise to the idea that some wreck had taken place upon this formidable part of the coast. Some of the wood was so perforated by the pholades, that it resembled timber used for naval architecture, the holes being like those for the passage of the ropes of a ship. The *Pholas dactylus* was the creature which had drilled those perforations into the wood, and I saw specimens taken from it five or even six inches in length."

In addition to the *Pholas dactylus* two other varieties of these shells were found, *Pholas candida* and *Pholas parva*, imbedded in the peat.

Mr. Lukis's specimens were all dead, but Mr. Macculloch, of Guernsey, has informed me that he obtained living shells of the *Pholas dactylus*. Birds'-nests, and hazel-nuts, with the kernels yet within them, have also been found in the peat. This latter fact is the more observable in consequence of the infrequency of the occurrence of the tree in the island. In addition to these, the teeth of horses and hogs have likewise been found in it.

"Another fact," observes Mr. Lukis,¹ "of much interest to the antiquary is, that pottery and stone instruments, the tools and vessels of the first inhabitants of these islands, materials in character co-existent with our cromlechs, and their contents recently discovered within them, formed of the same substances, and in every respect connected with the races which have created them, have been from time to time found in the vegetable deposit in Vazon Bay. It is also reported that several hundred Roman coins were discovered in the peat some years ago." No human remains have yet been found in the peat.

From many circumstances which have been noticed, it is extremely probable, if not positively proved, that this bay is of recent formation, comparatively speaking with, for example,

¹ The *Star*, Guernsey, December 1847. See Appendix to this work.

Petit Bo, or Saints' Bay. The vegetable deposit is known to extend, beyond the present low-water mark, to some distance toward the west and south under the sea. From this it may be concluded that the present domain of the waters must have considerably extended itself after that the waves had surmounted the original barriers which opposed their invasion of the land. The present rocky islets and sunken rocks which skirt the sea edge of this bay have been thought to be indications of the original coast-line, having the additional protection of an accumulation of drift. In consequence of some great event, the land they protected became overwhelmed with the waters, and the sea has since that time held undisputedly the territory of land comprised within Vazon Bay, and its promontories. It is said that the lord of the "Fief le Comte," which includes Vazon Bay, has deeds by which the tenants were bound to pay a trifling duty, called *pénage*, for the privilege of feeding their swine in the forest of the Vazon; and that in the reign of Henry II., was granted part of the island to the Count of Mortain, from whence was derived the title of Fief le Comte, or "Count's Fief." The following additional facts appear, however, to set this statement in a very questionable light.

The tenants of the Fief le Comte still pay the duty called *pénage* for the swine kept by them ; but this duty, so called from the French word *pêne*, which means oak and beech-mast, was often exacted where no forests existed. And as to the deeds spoken of, competent authorities have stated that no such exist ; and the manor bore the name of “Terra Comitis” long before it came into the possession of Henry II.’s son, John, Earl of Mortain, having belonged in earlier days to the famous Earls of Chester.

There is every reason to believe that the submersion of the Vazon took place long before the Conquest, probably at the time of the great cataclysm which inundated the large tract of land in the Bay of Avranches in 709.

From this spot to the termination of the northern coast are several small bays, resembling in their form and outline those of Rocquaine and Vazon. Some proceed to a greater, some to a less depth inland. They are uniformly defended by rocky promontories, insignificant in point of height, but composed of the most solid and enduring materials, since it is upon this coast that the granite rocks make their appearance. The foundation of these bays, by the preying of the waters upon the unresisting materials composing the tracts between these

promontories, is evidently much more recent in its date, and has been infinitely more rapid in its progress, than that of such bays as Fermain or Petit Bo bays, where the rocks have yielded only particle by particle to the destroying agency of the waters and currents.

The abrupt and perpendicular outline of Sark appears to forbid the idea of its possessing any bays; yet on all its sides there are hollowed into the wall-like cliffs mimic harbours and bays, some of which are even dignified with this title. One of these is the beautiful inlet called Dixcart Bay. It lies at the termination of a pretty valley, down the centre of which a tiny rivulet gushes, and terminates in a little cascade falling into the sea. The beach in this bay is very white, and consists of fine sand. The cliffs around exhibit the dark veins of trap underlying other strata. The rocks have been much weathered, and show, by their polished and excavated bases, the powerful influence of the tides and the waves which beat against them. Various shallow caves and perforated rocks constitute, in addition to the natural beauty and picturesque character of this bay, an additional attraction.

On the east coast of Sark the hollowing out of the cliffs by the waters becomes very conspicuous—perhaps in no place more so than at the

extraordinary harbour called the Creux. Few things are more remarkable in the impression they produce on the mind than that of a first visit to this singular island, when the landing is effected at this Creux Harbour. On the arrival of the cutter at Sark, she is moored in a little bay entirely surrounded with perpendicular rocks, in most parts as smooth as a wall, and the inquiry naturally suggests itself as to what mode of access into the island can possibly exist out of this bay. To ascend the cliffs were as hopeless and as dangerous a task as to scale the side of a house. On landing, the entrance to the interior of the island is perceived to be by a tunnel cut in the rock at one extremity of the bay. Through this tunnel, which is twenty-five yards long and wide enough for the passage of a horse and cart, every one who lands at this, the best harbour of this wild island, must pass, in order to reach its interior. The tunnel is of artificial origin, and was cut through a soft vein in the rock by a former lord of the island, of whose perseverance and ingenuity it remains a singular evidence. The steep rocks which guard this remarkable spot are in some places traversed by argillaceous veins, and in others the stains of oxide of iron stream down their sides. The outer rocks on each side are of more enduring material, but at the base of the others

a mass of debris indicates the destructive agency of atmospheric elements. The tidal current runs with great velocity outside the harbour, and a group of curious rocks called the Burons are placed in the midst of the foaming stream of waters.

The most picturesque bay in Sark is that of Havre Gosselin. The rocks at this spot, as at the Creux, are, on either side, not only inaccessible, but absolutely incline over at a considerable angle. The detritus of the rocks above the minute shore of the bay has sloped the descent in some degree at that side; yet here it is very abrupt, and is only mounted by a steep zigzag pathway, at places almost precipitous. There is another path up the rocks at this tiny bay, but it is one which requires considerable courage to attempt. An iron ladder is fixed into the side of a perpendicular mass of rock, at the top of which are some rude steps, to ascend which the assistance of a rope fastened to the rock is necessary; a rough path then conducts to the summit. The beautiful transparency of the waters here reveals their depth, which adds to the sense of danger experienced.

The most interesting and beautiful scene we have beheld in these islands, is that presented at the Port du Moulin, a small bay on the north-west of Sark. The cliffs still preserve

the same character of abruptness of outline and perpendicularity of face, and their height is, probably, nearly three hundred feet. To look down upon the rapid current of blue sea below, foaming against the broken masses of rock which lie at the base of the cliffs, presents the spectator with a scene not only wild in its character, but peculiar in its features. A tolerably easy pathway leads to the shore, and the remarkable constituents of the picture here appear still more surprising. The cliffs, which are of schistose rock, have yielded with greater facility than usual to the destructive influence of air and water. Fragments of broken rocks detached from their summits lie prostrate at their base, and are now the prey of the overwhelming surge, which is constantly removing them particle by particle, and rounding their general outline. Some of these great masses are twenty feet or so square, and have been polished in a remarkable manner by the action of the waves. Their composition, texture, and colour, vary greatly.

But in order to obtain the best view of what we may consider to be the most striking objects in the natural scenery of these islands, the bay must be quitted, and a boat employed in order to land upon some of the projecting rocks a little outside the bay. Upon a rock which was slowly being relinquished by the tide, we stood

and contemplated the extraordinary appearance of this spot. At a little distance in front were four masses of rock, so regular in their outline and so just in their proportions, that it required some abstraction of mind to realize the fact that they were not of artificial origin. These are called the Altars—*Les Autelets*. They are



THE ALTARS, SARK.

cuboidal heaps of rock, standing at some little distance apart from each other, and separated by the tide. On approaching them more nearly, the singularity of their structure becomes evident. Their planes of stratification are almost horizontal, and are so distinctly marked, that the rocks appear as if formed of masses of

masonry squared by the chisel and laid by the builder. On carrying the eye horizontally from the Altars to the cliffs from which they are separated, it is evident that the stratification of the latter is precisely similar to that of this group; and that consequently they were at some former period united with the main land appears a reasonable conjecture. It appears not improbable that these Altars are only the remains of a grand natural arch formed above by horizontal strata of the same rock, of which the Altars were the buttresses. The furious storms which prey upon these coasts probably brought about the destruction of this arch, since the sea around the Altars is filled with broken masses of rock, but the Altars remained, and in time assumed their present picturesque and suggestive appearance. They are the favourite resort of hundreds of sea-gulls, whose incessant cries are heard even above the thunder of the waves beating against this rugged coast. Among the rocks at the side of this interesting bay exist several caves, which exhibit evident traces of their having originated by the grinding of the waves upon the cliffs into which they have been hollowed. It is now time that we quitted the bays of Sark for those of Jersey.

The whole of the northern shore of Jersey is indented with small coves and bays, some of

which are extremely picturesque, and are, consequently, well known to those who visit the island. On the western, southern, and part of the eastern sides, the bays assume the form belonging to bays properly so called. The coasts have shelving shores, and the bays are wide and sandy : they are separated from each other by high rocks which project into the sea, forming the headlands. The most beautiful of these as respects its extent is St. Aubin's Bay. The width of this bay at the mouth is about four miles, and it is about two miles in depth. It extends in a beautiful curve from the town of St. Heliers to that of St. Aubin. "The harbour itself," says the old author Heylin, "is of good capacity, in figure like a semicircle or crescent, and, by reason of the town adjoining, known by the name of the Haven of St. Hilaries." At the present time it is universally known as St. Aubin's, not St. Heliers' bay. About three quarters of a mile from St. Heliers, the fortress Elizabeth Castle is seen apparently rising out of the waters of this bay. This castle, which has before come under notice, is situated upon a mass of rugged rock, and has been quaintly described as "so naturally defended with sharp rocks, and craggy cliftes, that though the access to it may be easie, yet the surprizal would be difficult." It is, how-

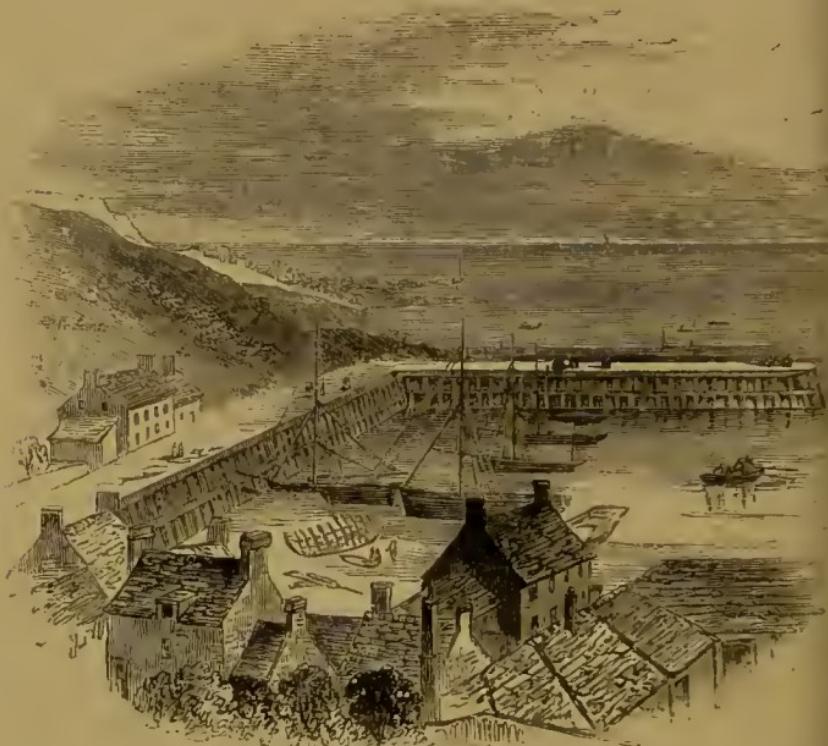
ever, of little present value as a fortress, the whole bay being commanded by Fort Regent. At about half ebb tide the sea leaves these rocks, and there is then a free passage from the town to the castle, which is called the bridge. This is a natural causeway formed by the confluence of the tides, and is useful as a medium of communication with the land. At the opposite side of the bay is another, but much smaller fortification, sometimes called St. Aubin's Castle. Both these castles are built upon schistose rock. The peculiar ruggedness of this rock gives a singular appearance to the bay as it is entered by the traveller, and suggests a number of wild and fantastic forms.

The bays of St. Clement's, Grouville, and St. Catherine's, lie on the south-eastern and eastern coasts of Jersey. Like that of St. Aubin's, St. Clement's and Grouville Bays have low sandy shores, but the waters beyond are thickly studded with rocks. A somewhat poetical description of this part of the coast of Jersey has been given by Dr. Plees:—"When the tide rises to its full height, the view presents a most picturesque scene, exhibiting a multitude of islets issuing from their green limpid bed, and seeming to invite the incautious mariner to approach this attractive archipelago. But woe to the stranger thus allured,—for as the flood

recedes, the number of these projecting rocks increases until the whole coast is laid open, and discloses a terrific congeries of rugged rocks, varying in height and dimensions, and that appear to render all access to the island absolutely impracticable. In fact, the whole marine extent, from Elizabeth Castle to the long and narrow point which forms the southern boundary of Grouville Bay, is completely studded with irregular rocky masses, and this natural embossed shield is rendered more eminently defensive by the strong and varying currents that intersect these craggy protuberances." Grouville Bay forms a beautiful curve, at the northern extremity of which Mont Orgueil Castle appears, standing in bold relief against the sky. A cut on a preceding page gives an extremely accurate view of this spot. There is an interesting group of schistose rocks at its southern boundary, among which is an isolated rock, which, though connected with the land at low water, is completely surrounded at high water. It then appears like a tall column in the midst of the waves. It is frequently obscured by clouds of spray, and during storms, when the waves reach an unusual height, it seems almost absorbed by the ocean. St. Catherine's Bay, to the north of the latter, presents no features demanding particular notice. But it is

interesting in several respects to the geologist, as at its northern termination the remarkable pudding-stone rock abruptly commences, continuing from that point some distance along the north-eastern coast of the island.

Rozel Bay is, perhaps, one of the most attractive of the whole, and lies on the eastern



ROZEL BAY, JERSEY.

coast. Like Fermain Bay in Guernsey, it is a Voe or deep creek rather than a bay. Deep and shady glens, wooded with various trees, lead from it into the interior, while its sides are rugged and precipitous, and echo the sound of

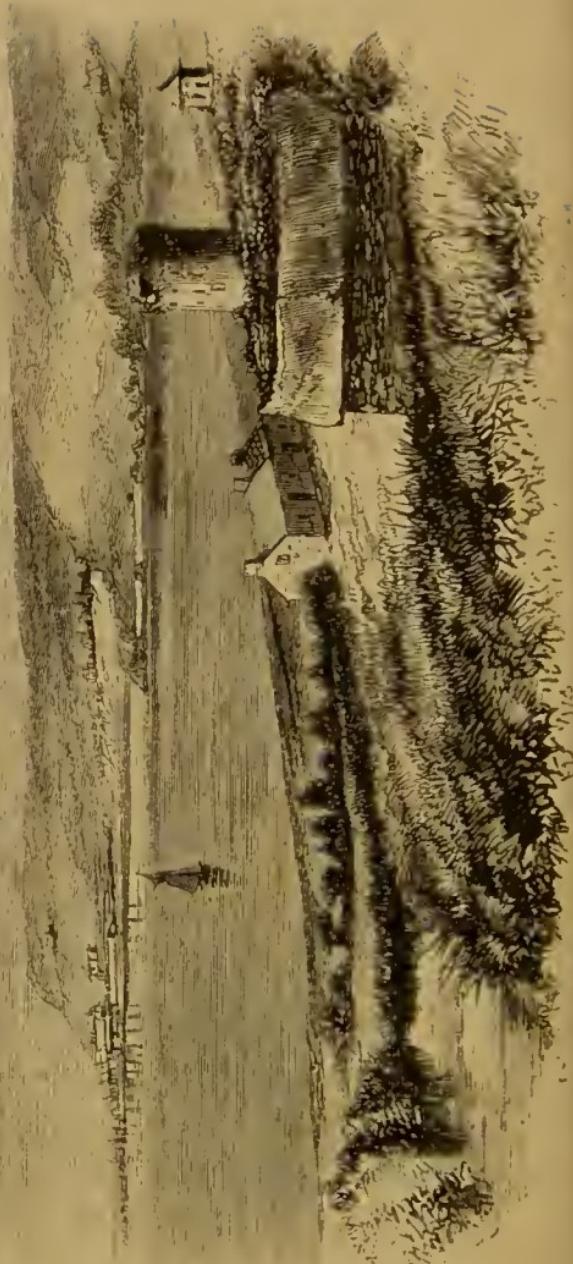
the long roll of the waves upon the beach. The descent to it is by a tortuous path, and near the sea are scattered the cottages of a few fishermen. Some untenanted barracks are also seen near the spot. The form of this little bay is semicircular. It is largely resorted to by visitors to the island. Boulay Bay lies to the eastward of Rozel, and is a much larger bay than it. A spirally descending road leads to the beach, where an extremely beautiful prospect is gained. The bay is defended by steep cliffs, which extend a considerable distance on each side, terminating on the one side in a promontory called Rozel Tower, and on the other in a point called Belle Hague. The outline of the bay is, however, interrupted by several projecting erags, and by some rocks which are of an abrupt form, and are commonly inundated when the tide is at the full. Along the roeks of the bay a number of small coves are found, up which the waves roll with an incessant dash. The depth of water in this bay is considerable, even at low tide. In most of the other bays the depth is but trifling and a large portion of the beach is quite dry. This has attracted official attention to the spot, as offering some advantages for the formation of a naval station. A pier of a rude kind at present exists, but it has been in contemplation to con-

struct one on a more extensive scale, with a breakwater, so that a haven might be formed capable of receiving ships of the highest class. The undertaking has not, however, as yet been commenced; and the excellent new pier at St. Heliers seems to render it less necessary now than formerly. The beach is composed entirely of loose rolled stones. The bay is defended by a battery. From the heights that overlook it, the opposite coast of Normandy was so distinctly visible, that we could have believed we saw the water's edge. A curious variety of compact felspar, tinged green, occurs in masses in this bay, numerous specimens of which, in various conditions, may be found on the beach. Boulay Bay is represented in the frontispiece to this chapter.

The very beautiful cove called Grève de Lecq lies near the north-eastern boundary of this island. It is approached through a narrow and deep valley, of a wild but beautiful aspect; on either side are high cliffs, and the falling of the blue waters on the beach renders the scene very attractive. The rocks in this bay are inclined at a considerable angle, and rising, as they in many places do, abruptly from the water, their appearance is very singular. The force of the waves is greatly felt on these cliffs, and their effects are visible in the disin-

tegration and decomposition of the rock, and in the production of a number of little coves and creeks. It has been already mentioned, that the seaward line of rock, at this part of the coast, is advanced by a sort of ledge in front of the cliffs, which rise abruptly and steep behind.

The only bays in Jersey now remaining for notice are those of St. Ouen and St. Brclade. The former of these occupies the greater part of the north-western side of Jersey, and is the largest bay of the whole. The northern boundary of this bay is formed by a large irregular rocky mass called L'Etac, a site fatal to ships. The southern boundary is formed by a rocky group called La Corbiere. Near this boundary a tower is erected, accessible at low water, but sometimes, in consequence of the fury of the elements, inaccessible for many days from its exposed position. The whole upper part of the beach in this bay is flat and sandy, and receives the fury of the Atlantic waters beaten into it by north-westerly gales. It is consequently dreaded by the mariner from the boisterous condition of its waters. The lower part of the beach consists of exposed beds of rock, over which the surge breaks with uncontrollable fury. Above, the sand accumulates in dunes, the form of which is perpetually altering in consequence of the strength of the winds acting upon this



ST. BRETADE'S BAY, JERSEY

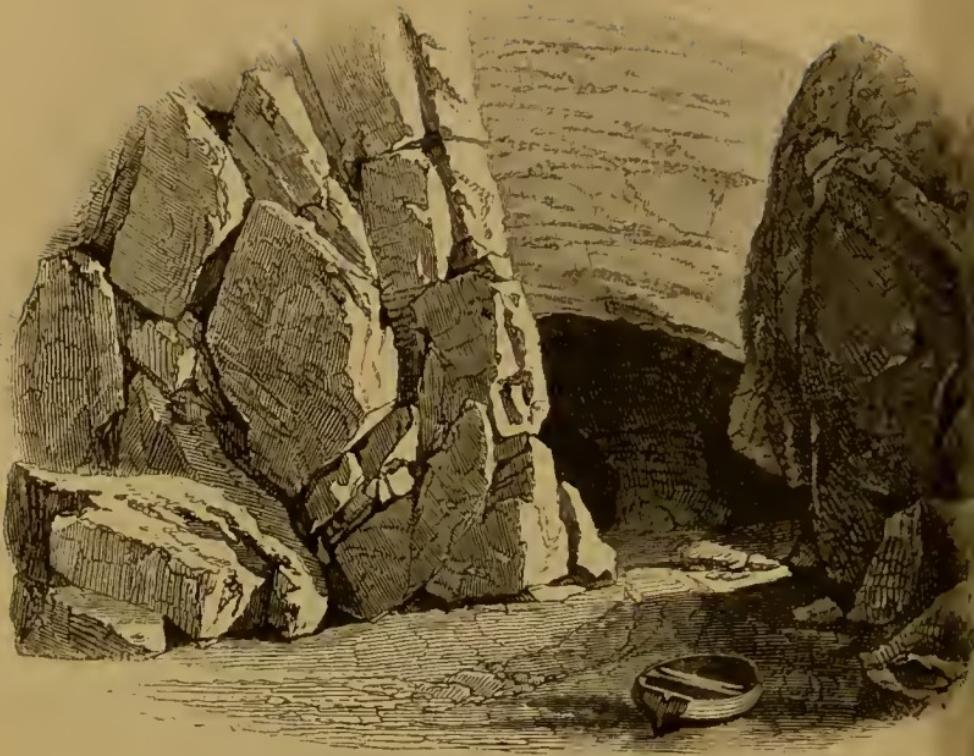
part of the island, which scatter the fine sandy particles to a great distance over the land. There is evidence to show that a great part of this bay was formerly dry land, as has been already adverted to in a previous page.

St. Brelade's Bay presents some points of interest peculiar to itself. A sloping valley, well-wooded and dotted with houses, leads down to this bay. The road to it runs along the edge of a ledge of rock at some height above the level of the water; the rocks tower above. The cliffs forming the natural boundaries of this bay on both sides are very abrupt and picturesque. The most singular circumstance about the bay, is the extraordinary situation of the old church, the most ancient religious edifice in the island. This church, which is said to have been consecrated in 1111, or upwards of seven hundred years since, is situated close to the water's edge, on the west side of the bay. It is elevated but a little from the waves, which at high tide reach the churchyard. Tradition relates that this edifice was to have been built on the eastern, instead of on the western side of this bay; but whenever any materials were collected for the purpose, fairies carried them away, together with the workmen's tools, to the place where the church now stands. This, being done repeatedly, was at length con-

ceived to be a miraculous interposition to point out the divinely selected site. Sceptical persons, however, assert that the removal was effected by human hands, under the direction of the priest, who had an objection to the eastern side of the bay. The bay is a semicircular basin, but its regularity of outline is broken on the eastern side by a projecting mass of rocks, by which a second creek is made, forming a smaller bay. On the land side, high rocky eminences surround and hem it in. The cliffs on the eastern and northern side are full of vertical fissures, intersected by horizontal ones, so as to divide the rock into cuboidal masses, giving rise to an appearance resembling masonry. It has been elsewhere remarked, that this sort of cleavage is very commonly met with in granitic rocks; and these belong to that series. Near the eastern point of this bay there are quarries, in which are raised good masses of compact syenite for building purposes.

The whole of these bays in each of the islands form an interesting study to the naturalist. Their formation and scenic peculiarities are often of a remarkable character, and it is to be regretted that so small a degree of scientific attention has been bestowed upon them. When we regard them, as unquestionably many of them must be regarded, as the results of the

combined mechanical and chemical forces of nature, acting through long periods upon the most resisting materials, and successful in their operation, we cannot consider the most minute of these bays as undeserving the notice of science. In the production of the larger bays an additional force is called into action,—that vast exercise of internal power which slowly, but surely, uplifts, or, as in the present case, depresses whole districts, and thus exposes the low-lying parts a prey to the desolating waters. Of this, however, we are again to speak.



CAVE ON THE COAST OF JERSEY.

CHAPTER V.

THE CAVES.

AMONG the many evidences presented by the rocky coast of these islands, of the destructive force of the tides, currents, and waves, the production of a large number of caves is, perhaps, the most interesting. As we have visited most of the caves in these islands, we are able to give an account of them, in most instances from personal observation. From the popular interest which attaches to natural excavations

of this description, the caves of the Channel Islands, or, at least, those of them which are readily accessible, generally prove objects of attraction to tourists. Many, however, remain unknown, excepting to the inhabitants of the neighbouring coast. A considerable number have received more or less appropriate titles. It is remarkable to how great an extent popular superstition has, in all countries, invested caves with a supernatural character. Among the Romans, caves were consecrated to fabulous nymphs, who were there worshipped as in temples, as it was conceived, fitted by nature for their use. Numa consulted Egeria, as fable says, in a cave, which is still shown at Rome. And among the mythological records of other countries, the same indication of the desire to attach a sacred and mystical importance to these excavations appears. Nor is this less so in these islands, and, perhaps, more particularly in that of Guernsey. The inhabitants of the Western Isles have, in like manner, guarded the innumerable caves of their coasts with legends of the wildest description. Of some it is said that whoever penetrates to the end will return without his skin. Some are said to be endless, and that the piper who entered never returned, the sound of his pipes vanishing by degrees till it was lost. Dr. Macculloch says—“Among the

people of this country, as well as with us travellers and cockneys, there is always something mysterious and marvellous attached to the notion of a cave. Like cascades, they have some hidden charms which render them among the first objects of attraction ; and whether good or bad, hideous or beautiful, it is quite sufficient if they are black and dirty. There is not one throughout the country which has not its guide, and its fable, and its farthing candles." Superstition has peopled the dark caverns of these coasts also with fairies, and though the occupants are not to be found there in our own century, the names remain, and the superstitious veneration also, but in a diminished degree. Perhaps there is no cave on these coasts so formidable to enter as that of Trophonius, into which none but the purified were permitted to enter ; but most of them require the exercise of some degree of caution, and oftentimes the use of a boat and the assistance of a guide.

The caves on these coasts appear to me to be divisible into two classes, according to their mode of formation. The majority appear to have been produced exclusively by the mechanical erosion of the waves, assisted by the chemical process of disintegration set up in the rock by water and air. But another class of caves, generally very long and narrow, cannot

have had this origin, and are, without doubt, fissures caused in the original rock by the upheaval which, at a period very far back, first lifted it above the level of the waters. We shall speak of each of these kinds of caves in turn.

A very remarkable instance belonging to the latter class is found in Guernsey. This exists on the side of Vazon Bay. The entrance to the cave has nothing remarkable in its appearance. It is found near a tower called Hommet Tower, on the coast. It is known as the "*Creux des Fées*," or Fairy's Cave. The cave extends only to a depth of about thirty or forty feet. A number of wild fables have become associated with this cave. It has been said to be impassable beyond a certain depth, in consequence of the existence of mephitic vapours within it. This is highly improbable in a geological district, which from the nature of its constituent rocks can scarcely be thought subject to emissions of carbonic acid gas from the earth. In fact, the cave is of very limited extent. The cave is thought by the country people to have been formed by a band of fairies. It does not appear to have been in any degree due to human agency, however possible the conjecture that it might have served in time of war for purposes of concealment.

The Creux Mahié, the most considerable

cavern in point of size in Guernsey, is situated on the southern coast, in the parish of Torteval. It lies at the head of a small creek, and appears to have been formed by the action of the waves wearing away the softer portions of the rock. At some distant period, a large piece of the cliff above the cave has fallen down, partially blocking up the entrance, and forming a sort of terrace which keeps out the sea. Rude steps lead down from this terrace to the floor of the cave; and when the eye becomes accustomed to the imperfect light, or that the place is illuminated by means of a bundle of ignited furze, the lofty dome-shaped vault, and the huge masses of detached rock which seem to have been rolled together by the action of the waves, present a striking and impressive scene; while a feeling of mystery is excited by smaller caves and fissures in the walls of the cavern, which, although easily traced to the termination, are confidently asserted by the peasantry to lead deep into the bowels of the earth, even to the very centre of the island,—a tale told also, and with quite as little truth, of the Creux des Fées at the Hommet.

Another cave of a similar kind, and evidently not produced by the action of the sea, exists at Herm. We found the entrance of this cave almost blocked up by masses of fallen rubbish,

reaching to such a height as to render its exploration impossible. One of the oldest residents of the island assured me that it extended far into the centre of the island, preserving its character as a narrow rugged fissure to its termination. Unless the sea removes the debris which is now choking up the entrance, to the height of perhaps thirty feet, it will soon become entirely obliterated. The waves have, at present, no access to this cavern. We believe that in the isle of Brechou, and probably also in Sark, similar fissures exist, but we had no opportunity of personally ascertaining the fact.

Caves of this kind differ essentially from those which are commonly found on the coast, in their mode of origin, as already observed. While, on the one hand, the action of water in widening the entrance is not to be questioned, yet, on the other, it is only a secondary agency in the enlargement of the cave or fissure, which always had existed. In what precise manner such fissures are formed, (and they exist in all classes of rocks,) it is difficult to ascertain. Most probably they arise either in consequence of some violent subterraneous shock, or are formed during those upheaving movements which must have accompanied the elevation of these islands above the sea-level. The operation of internal springs of water in the production of the caverns cel-

brated in other countries is well known, and it is possible that the percolation of water through the crevices of the rock, and its effect on the mass, may materially assist in the formation of the other kind of caves, but such is not the origin of the class of caves in question.

The next class of caves have the following characters. They do not extend to a very great depth, their dimensions are moderate, they often narrow to their termination in a crevice into which a knife can just be inserted, and they are always found on the sea-coast, being at full tide more or less filled with the waves. The greater number of the caves of the Channel Islands have these characters, and consequently belong to this division. The distinguishing character of these caves is, that they are chiefly formed by the mechanical and chemical waste resulting from the incessant action of the waves. Perhaps the following may be taken as a tolerably correct account of the various methods of their formation. A softer vein of rock was exposed to the beating of the waves against the shore. The mechanical effects of this force, superadded to the chemical changes established between the rock, the air, and water, became in time more felt by this than by the surrounding rocks, whose chemical composition and structure better enabled them to withstand the waves.

than it. Particle by particle yielded to the destroying powers, crumbled to dust, and was swept away by the waters. Occasionally, in all probability, large fragments having lost their support would fall out, and these also in turn would be hurried into the common wreck of the rest, would remain for a time scattered on the beach, and then become rolled away by the billows.

But there are some caves of no great depth in many parts of this coast, which can scarcely be thought to have thus originated. They are evidently fissures which, originally existing in the rock, have widened by the action of the waves, until ultimately they assumed their present size. On the southern coast of Guernsey, in many places in Sark, Herm, and Jersey, we have seen caves of small dimensions whose evident origin was in a fissure, the original size of which is yet visible at a height above where the waves can reach. In some places the rock is very much cracked within these caves, and large fragments can be detached with no great difficulty; a sure evidence that while much is due in the process of their formation to the mechanical action of water, much is also due to the slow disintegration produced by chemical forces. At the end of such caves, the fissure, which was originally the only solution of conti-

nuity in the surface of rock, is very distinctly seen.

The most interesting as well as the most extensive caves in any of the islands exist at Sark. In almost every exposed cliff, near to the water's edge, a large number of excavations, some of greater, some of less depth, are to be found. These caves give a great charm to the wild coast, and supply an almost endless subject for the explorations of those interested in such scenes. But the great caves of Sark are all found at no great distance from each other on its western coast. These are Les Boutiques, the Gouliot caves, and that of La Moie de Mouton. It is probable that, in the formation of the whole of them, the mechanical and chemical forces to which I have alluded have fulfilled an important part; but it is also probable that they were originally rather wide fissures in the primitive rock, which time and elemental warfare have excavated to their present size.

The caves called Les Boutiques—or “The Shops”—are among the most remarkable caverns of whose existence we have any knowledge in our own islands. The approach to them is from the sea, and their appearance seen in thus drawing near to them is grand and impressive. There is deep water at low tide almost to the entrance, and rugged masses of broken

rock form a sort of rude terraee, whieh leads to the eaves. On either side rise dark walls of roek, piled above one another in a sort of regular and yet confused arrangement. The mouth of the eave is divided by a natural partition somewhat inclined, and whieh extends some little way into the eave. The entrances thus divided are not of equal dimensions, and the slope of the larger one is more regular than that of the smaller. One might suppose, from its external appearanee, that this were some grand double tunnel formed by nature for the passage of the waters. The cliff above slopes in some degree down toward the entrance, but those on each side rise up in rugged grandeur to a considerable height, and from their regular stratification wear some resemblance to an artifcial strueture. Some curious veins of quartz, which have been exposed by the waste of surrounding materials, are visible in the roof of these eaves, and suggest the idea of an arch, the keystones of which are about to drop from their position. The roof drips with water, and in the decomposing material which finds a lodgment in the crevices near the summit of the entrance, elusters of ferns luxuriate, flourishing in the subdued light and perpetual moisture which bathes their roots. The contrast of their intensely green fronds with the amethystine

colour of the projecting veins is very beautiful. A eave thus adorned by nature, and thus wildly situated, would seem a fit abode for those fabled oceupants of the deep of which the traditions of all islanders speak so much, and often so poetically.

The exploration of the interior of these eaves can only be made by the assistance of a guide, furnished with a rope and ladder, and with torehes. A little distance from the mouth of the eave are several pools of beautifully clear water, left by the retiring tide. Through these it is often necessary to wade in order to reach the wider parts of the eave within. By the ladder being laid across these pools a wet foot may often be avoided. The advancee beyond this point is not difficult. One of the passages opens into a large vaulted chamber, the ceiling of which is perhaps fifty feet from the floor, and, singularly, an opening exists at the top, through which daylight streams down, and diffuses a subdued light over this subterranean hall. Torehes, or fagots of furze, light up with a singular effect the gloomy and rugged walls of the passages leading into this chamber, which branch off to the right and left. The whole extent of these eaves is very considerable. When the tide is at the full the entrance to them is not entirely covered by the waters,

—a fact sufficiently indicated by the green and drooping luxuriance of the ferns growing from the roof. Nevertheless, to be overtaken in these caves by a spring tide, urged onward by a westerly gale, were a position the terror and danger of which few could encounter. That Les Boutiques have been chiefly formed by the action of the waves, can, I think, be scarcely doubted; but, in consequence of the fissured state of the overlying rock, the disintegrating process has been immensely forwarded by the percolation of water from above, which accounts for the production of the lofty chamber and its opening at the top. The action of the waves at the entrance is, at the present time, furious during storms; and hence, very probably, the circumstance, that while the unfissured rock on either side has been little affected, that part of the cliff into which these tunnels are pierced has receded backwards from the general coast line. Great fragments of broken rock, rounded by the waves, bestrew the sea-approach to these interesting excavations. In the cliffs along this coast of Sark, which, commencing at the northern extremity with granite, display various modifications of the metamorphic rocks as we proceed southward, numerous fissures exist, the materials of which are partly washed out, while those which remain consist of decomposing fel-

spar, iron pyrites, and quartz. Occasionally, metallic indications are perceptible.

Some little distance to the southward, but on the same line of coast, is the cave of the Moie de Mouton. This cave is wholly inaccessible by land, in consequence of its being



MOIE DE MOUTON CAVE, SARK.

formed in the side of a peninsular mass of rock, separated by a steep precipice from the mainland of Sark. The form of this rock is very peculiar, and resembles that of a shoulder of mutton very closely. Its sides, up to a certain height, are in most parts precipitous, and in the

rest shelve in a very slight degree. The summit of the rock is capped with herbage. As I passed this rock with its scanty green covering, and saw with surprise eight or ten sheep browsing upon it, in places inaccessible to the foot of man, the boatmen told me the following curious anecdote about these sheep. They are carried thither in a boat from Sark, and are made to scramble up the rock, where they are then left. Escape is impossible, for on the land side is the steep precipice of which I have spoken, and on all the others are dangers equally great, with the additional one of the foaming current which sweeps the base of the rock. The sheep are securely left here to browse upon the scanty pasturage the surface of the rock supplies until they are wanted. Their owners then bring a boat to fetch them; but as it would be hazardous in the extreme to send a man after them, they are captured by the following singular expedient:—The best-conditioned sheep of the number is selected, and the owner aims at it with a musket. The poor animal, stricken by the ball, falls and rolls down the cliff, either to the spot where the owner is waiting to seize upon its lifeless body, or into the waters, from which it is rescued by him and taken home for domestic use. The same individual also told us, that having occasion one foggy evening to

land a person on Sark, he unfortunately mistook this curious rock for another near it, from which access to the island is very easy. The person was landed on the Moie de Mouton. After groping his way up the rock, his companion having bidden him good night and made sail for Herm, he reached the summit, and here, to his terror and surprise, he found, instead of a path for his safe guidance homeward, a steep precipice, which he dare not attempt to descend. Immediately the truth flashed upon him, that he was on the Moie de Mouton, and must be content to wait the night there, in hopes of being seen and rescued on the day following. It may be imagined, that that night, spent in this desolate spot, where every fall of the waves upon the rock produced a mournful sound, was long and anxious to him who had to endure it; and it is well to be able to add, that early the next day he was seen in his perilous position and rescued from it by one of the Sark fishermen.

The cave in this singularly formed rock is very regular in its outline. It is somewhat triangular in shape, the base of the triangle forming the roof. Veins of felspar are seen within it, the glitter of which forms a pleasing contrast to the blackness of the interior passages. It can only be entered, and that not

without danger, by a boat, to a small depth. In stormy weather it is of course wholly inaccessible. As the evening was closing in we did not enter it, but, by passing near to the mouth in a boat, a good general idea of the excavation was formed.

The Gouliot caves, which are a little further to the south, and exactly opposite the Isle of Brechou, are larger and more remarkable than any caves, except the Boutiques, in this or any of the islands. The gneissic rocks, which once seem to have connected this island with Sark, do not present the same appearance of horizontal stratification so remarkably shown in the schistose rocks a little to the north, at the Port du Moulin and Les Autelets. They would seem to have been upheaved by the trappean rocks from below on their eastern side; and thus the inclination of the strata is considerable, and the rock slopes westward. In consequence, probably, of the disturbance thus produced, two chasms were formed at the sea-level, and as the tidal current runs at a furious rate against the rock, in time the present extensive excavations were produced by the wasting effect of the waters. One of these chasms runs so across the direction of the rock, and, consequently, so nearly parallel to that of the current, that the waters pour through it in boiling eddies when the tide is

at half-flood, and up to full water. This chasm is narrow, and extends about fifty yards into a small creek. It is difficult to convey an idea of the extreme beauty of this wild spot—of the singular and fantastic play of light and shadow which it affords in consequence of its broken and rugged character. When the tide pours the waves through it, and when the sun is strongly shining on the entrance, the intense blue of the waters is exquisitely seen.

The caves consist of two vaulted chambers, into which a number of fissures open. One of these is said to have a most singular conformation, resembling the human ear, and possessing a trumpet-like form. In this respect it differs from the other fissures, which are all straight. The operation of the waters against the rocky walls of these caverns is very conspicuous. The walls are, in places, covered with deep red sea-anemones, with corallines, madreporites, and sponges. It is impossible to stand in these caves and listen to the occasional angry hiss of the waves on the rock outside, without a vague fear of being surrounded by the waters, and hopelessly imprisoned in the dark recess.

Fiction of the flimsiest kind has attached certain relations to some of these caves; but there is a cave in L'Ile des Marchands, in

which the fabulous tales receive an apparent corroboration, in the existence of traces of its having been formerly occupied. This cave is called the Pirate's Cave, and it appears in reality to have been used as a place of concealment and shelter; their boats would be well concealed among the broken rocks, and there being no approach from land, it would be a very secure retreat. A quantity of red ashes, three feet or more in depth, was found in an attempt to excavate a mine; some pieces of wood were also found, and other evidences were discovered, which plainly indicated the fact of its having been at one time occupied. The entrance to the copper mine is in this cave, and by means of a lantern it is not difficult to penetrate some distance into the levels. The mine is not now worked.

Whilst exploring the western coast of Sark, we were often surprised at the regularity with which a deep-toned but low and muffled sound filled the air, resembling the concussion of a discharge of artillery, but greatly subdued. This sound many times suggested the idea that cannon was being fired at Guernsey, eight or nine miles off. We felt for some time perplexed as to the origin of this sound, which appeared the more noticeable amid the intense stillness of the surrounding scene. The fishermen were

unable to give any account of it. It was found, at length, that it arose from the concussion of the long swell of the wave against the mouth of a cave on the western point of L'Isle des Marchands. The air in this cave having no outlet, a large wave striking its mouth, produces the same kind of sound as may be produced by striking a tumbler with the open hand. Many of the caves, lying just at the level of the sea, are exposed occasionally to the influx of a higher wave than ordinary, and the result is the production of this sound, resembling a muffled drum. During storms, such sounds multiply both in number and in loudness.

The formation of the northern coast of Jersey naturally leads us to expect to find in that part of the island the most frequent instances of the occurrence of caves. We are not acquainted with any instance of these excavations occurring on the southern coast, at any other part than at La Moie, and on the eastern and western coasts there are none. A very interesting cave exists at the beautiful cove, Grève de Lecq ; except by approaching it in a boat, access to it is difficult. The cliffs in this vicinity rise so abruptly out of the water, that it is difficult to descend to the sea-edge at any place. Under a hill on the western side of this bay, which shelves rapidly until it has an abrupt termi-

nation in a precipice, the base of which is washed by the waves, the cave in question is found. By carefully descending a rough and narrow path, which in some places assumes a rather formidable appearance, the rocks at the bottom may be safely reached, and after a little climbing, the entrance to the cave is gained. The entrance to this, as to the greater number of the smaller ones which are to be found on this coast, is grand and imposing. The sea has excavated for its impetuous waters a broad passage, guarded on each side by black and precipitous rocks, the sides of which are polished by the perpetual friction of the waves. These rocks give to the dark excavation itself a character of solemnity and grandeur, which a mere opening in a rock would not have obtained. They form the porch to the cave, and give to the latter the appearance of a mighty tomb, dedicated by the rocks and waters to some of the inhabitants of the deep. The cleavage of the overlying rock into masses more or less resembling those piled by human masons, adds to the imposing aspect of this cave, and appears to support the idea which might be formed by the imagination of its artificial origin. The cave does not extend to any great depth, probably not further than from fifty to sixty feet from the entrance. The floor is of broken

rock and white sand. The height at the entrance is less than that of the interior. The aperture is, perhaps, fifteen or twenty feet, while the height of the roof from the floor is upwards of twenty feet. Like all caverns of this description, it is greater in height than in width; and the entrance has a jagged irregular outline. The tide enters and penetrates to its remotest extremity, but does not fill the cavity. From the end of this cave a beautiful and singular picture is presented to the eye. The darkness of the position occupied by the observer, and the effect of the sides of the cave in cutting off the extremely divergent rays, so as to limit the field of vision, are of great value in giving depth and tone to the picture. On either side rise the dark water-worn rocks which form the entrance, breaking the edges of the picture by the projection of their singular and rugged forms. In the distance the blue level of the sea appears, while along the white sandy floor the eye is conducted to the masses of fallen and broken rocks which form the foreground of the scene. During sunshine, when deep shadows and strong lights are formed by the various wild constituents of the picture, the prospect is extremely beautiful. Within the cave itself the gradations of light and shadow are very pleasing; and the rugged form of the

roof, with the irregular structure of the dark but glittering sides which support it, are well seen at such a moment. The cut at the head of this chapter represents this cave.

The caves at the promontory of Pleinmont, also on this coast, are more frequently visited and better known than that at Grève dc Lecq. The caves at this part are found on the western shore of a little bay, the eastern and northern boundary of which is formed by the promontory of Pleinmont. The rocks at this part are in some places nearly perpendicular. Pleinmont is connected with the main land by a very narrow isthmus, and the cliff on one side of this isthmus drops in a direction absolutely vertical from a height of two hundred feet into the sea. The caves are reached by a steep and narrow descent which leads to the rocky shore. There are several of them at no great distance from each other, and the easiest and perhaps the safest mode of exploring them is by a boat, as the tide flows into and partially fills the whole of their number. The management, however, of the boat must be exclusively entrusted to the fishermen conversant with the coast, as the currents and the half-sunken rocks render that a difficult and dangerous task to those unacquainted with them. Few of them penetrate to a greater depth than thirty or forty feet:

but tradition relates that some are of an amazing depth. This may probably arise from the fact that they are seldom explored beyond a short distance from their entrance, and the dark beyond serves to convey, however incorrectly, an idea of the infinite.

But we should convey an inadequate idea of the beauty of this romantic coast if it were supposed from what is here written that there are no other caves deserving notice than those here mentioned. The contrary is the truth. At various distances from each other a considerable number are to be found by that rock-climber who has confidence in the steadiness of his head and feet; and perhaps these are even more interesting than the deeper excavations in question. On a careful examination of them the process of their formation may be seen, from the insignificant rent to the deeper and broader cavity. In almost every instance there exists that long passage cleft through masses of polished rock which constitutes a sort of portico to the cave, so that the long roll of the waves washes to the very end of the excavation without resistance. The origin of many, in a rent of the rock, is also often conspicuously seen. Even in calm weather the attrition of the waves is considerable against the sides of these caves, and the rolling up of masses

of pebbles at each fluctuation, with the rattling return of the same, strongly suggests the conception of the means by which the sea has wrought out these excavations into rocks whose composition is very hard and enduring.

In many places on the coast of these islands we have been much interested in observing the formation of caves of another kind, and differing from both classes of caves hitherto noticed. The peculiarity of these caves is this,—they are perforations in a rock which terminate in a chamber open from above. Their shape consequently often resembles that of a horn, or of a wide-mouthed funnel, the small part of which is curved and brought into the horizontal direction. It appears to me that these caves are only extensions, under peculiar circumstances, of the caves of the last description. We have found them in almost every state of progress; from the first opening in the cliff with the perforation from above, to what we are led to believe is the ultimate state into which they are brought by the wearing down of the elements, when scarcely a trace of what had once been a cave of this description exists beyond a part of its broken sea-margin, and the rounded excavation in the rock.

We shall first proceed to describe several of these caves, and then endeavour to offer a few

ideas as to what may be conceived to be their mode of origin. One which has attracted hitherto but little attention is situated near La Moie Point in Jersey, on the southern coast. The line of coast is formed by rocks of some elevation at this part, and the action of the sea, when aroused by south-westerly gales, is extremely furious against this rocky barrier. The cave can only be safely approached by sea, although it is accessible with some difficulty and risk from the land. The entrance of it is surrounded by rocks, and is of no great height; but the passage is of some length, and when explored on the retiring of the tide, few places have a more singular appearance. The observer, standing in the dark and gloomy entrance, sees before him at a little distance a rugged excavation, the sides wet with the waters which have just left it, and the whole cavity illuminated by the perpendicular light thrown into it from above. The chasm which has thus connected the gloomy passage with the open daylight at the summit of the cliffs, is said to be about a hundred feet deep; but it is impossible to descend it, except by the assistance of ropes. It is necessary to be extremely careful to ascertain the state of the tide when exploring this cave, as, when at the full, it entirely covers up the entrance, filling the passage and the open-

cavity to some height. On the northern coast of Jersey, and in the vicinity of Grève de Leeq, we found several traces of similar eaves, but none perfect. We here also found what we have considered to be the ruins of a large funnel-shaped eave, to which we must again advert.

It may serve to strengthen the analogy between the features of these coasts and those of the Shetland Isles, if we quote from Dr. Hibbert's work his description of eaves so precisely similar in their character, and probably in their mode of formation, that they might be applied to several of those in the Channel Islands with equal correctness. Thus, in the island of Uist, Dr. Hibbert writes as follows : "Near this place, [at Lambaness,] at the distance of a few yards from the brink of a precipice, we look down upon a very deep sloping cavity, of a circular form, arising from the disintegration of the gneiss, which at the bottom communicates by a subterraneous channel with the ocean, so as to admit into it the flowing of the tide. This hole is named Saxe's Kettle, being a culinary vessel (and certainly a leaky one) that was used by the Shetland giant." Again, at the island of Meikle Roe, he writes :—"Its rocks are wrought by the inroads of the sea into steep precipices and excavations,

which extend for a considerable distance underground, being the dark abode of seals. These can only be penetrated in the serenest weather; it was therefore unfortunate for my visit that the murmur of the waves, as they sullenly broke on the sides of the ravines, might be heard at some little distance from the coast, in forbiddance of the charming pleasure of exploring these dismal recesses. After several ineffectual attempts to struggle through passages beset on each side by white breakers, that burst with loud commotion over disjointed rocks, our unsteady yawl was at length safely steered into what appeared the gloomy mouth of a cave; but we had not rowed many yards, when, emerging from a black and shady vault, we found ourselves floating upon a narrow canal-shaped basin, about twenty feet in width, that was completely open to the sky; and, at the same time, the full light of the sun burst upon us in its meridian splendour. The pellucid water of this retired shelter, undisturbed by a single ripple, beautifully reflected the lofty perpendicular walls of granite, through which it extended, in a straight course, for a considerable distance; the channel resembling, in the undeviating regularity of its form, some stupendous work of human ingenuity, where the solid rock had been pierced so as to form a deep secure

cove. But nature soon appeared to be the sole engineer of this well-wrought excavation. It was the result of atmospheric elements acting for an incalculable number of years upon the soft and mouldering materials of a dike, or vein of granite, enclosed within a matrix of the same substance, but of a much firmer texture." The same combination of circumstances which produces these excavations in one district, must, of course, produce them in another, *cæteris paribus*. Hence the fact, that even in minute details, the scenery of places so widely separated from each other as the Shetland and the Channel Islands, corresponds, in a remarkable degree, due allowance being made for the fact, that in the former islands the masses of rock are far more stupendous, and consequently the operations of nature more magnificent than in the latter.

There are two formations of this kind in Sark, which are very interesting. The first of these is called the Pot, and the other the Creux Terrible, or Terrible Cavern. The Pot presents a most curious scene. The approach to it is by a narrow and precipitous path on the side of the cliff, and requires care in making it. The termination of the path introduces the spectator to the edge of a large natural caldron, rounded as though by art, and scooped ver-

tically out of the rock. The sides of this caldron are covered with debris, in which ferns, ivy and grass find nutriment, and flourish luxuriantly, for some little distance down: but at a height of some feet from the bottom the sides of the Pot are smooth and water-worn. The bottom of this excavation is covered with large rounded blocks, polished by the action of the waves. On the seaward side, at the bottom, is a tunnel-shaped excavation, connecting the bottom of the Pot with the sea-shore, and through which one can pass to the shore. It is this tunnel which has given to the Pot its celebrity, and probably its title. In high spring-tides, accompanied with a gale, a singular phenomenon presents itself at this wild spot. The waters, urged forward by the force of the wind and the pressure of the long swell, foam with violence through the tunnel, and partly fill the caldron with foaming surge. The scene is now most peculiar, as the spray comes rising out of the caldron, and the eye looking down sees its deep recesses full of tumultuous and agitated waters. This singular excavation is in Little Sark, and it will be observed that it agrees in every respect with the general features of the scene just described, although necessarily on a much smaller and less impressive scale.

The excavation called the Terrible Cavern, or Creux Terrible, is on the same coast, but in Great Sark. It is of much larger dimensions than the preceding ; and it may be readily conceived there are seasons when this vast perforation has its terrors for those of ignorant and superstitious minds. The Creux Terrible is like a large crater, of a somewhat pentagonal form, near the sea. It is a conical cavity, having precipitous rocky sides, nearly two hundred feet in depth. The portion next the sea is supported upon columns carved out and fashioned by the sea, resembling the piers of a bridge, and this similitude becomes still more sensible as the tide rushes through the arches at the entrance to the Creux. In a stormy sea the appearance of this gulf is very imposing and almost terrific, the spray rising above its sides like a pot over-boiling, whilst the roaring of the waves below is carried up and reverberated from the surrounding heights, augmented by the acoustic figure of the Creux. But such scenes as these lose much of their force and elevating power over the mind, if viewed in the calm serenity of a summer day. To examine minutely the bottom of the Creux, the creeks and cavities in the strata, a boat is the best and the safest means, taking advantage of the low tide.

At some distance from this Creux is another,

called the Little Creux, and evidently of similar conformation to the greater excavation of the same name. In the island of Herm I found several interesting excavations of this description, of various sizes and in various conditions. One of these is extremely singular, and may be found on that part of the coast which I have already described as being in a mouldering condition. Seen from the shore, to which a descent must be made in order to investigate its size and position, it presents the aspect of a jagged chasm, with rough angular sides and a flat roof, beyond which the bottom of a perpendicular excavation may be seen. This excavation is of no great size, but it is an interesting specimen of a Creux, and as such is a type of the rest. The perpendicular funnel-shaped perforation in the rock is considerably larger than the horizontal passage entering it at right angles. The effect of light and shadow in these Creux is very singular, resembling that thrown into the right-angled elbow of a tube. In the instance in question a little rill of water ran down the upright part of the Creux, and appeared with picturesque effect as it was seen from the shore through the perforated tunnel. At full tide the water washes around and into the base of this Creux, representing one of the forces by which it has been produced; while

the tiny rill of water, trickling down from the summit of the pit within, may be regarded as the representative of another of these agents.

The only other example of a Creux to which it is necessary to direct particular attention, is one which will be found on the north coast of Guernsey. It is called the Fairies' Cave, and is easily explored from the shore at the ebb of the tide. Its size is not equal to any of the Creux at Sark, but it deserves notice as another instance of these excavations. The entrance is open to the sea, and is filled with rounded and water-worn blocks of stone. A little distance from the mouth two passages open and penetrate into the rock, separated by a massive wall of stone. The most curious part of this cave, and that which brings it under the proper denomination of a Creux, is the entrance-hall, out of which three horizontal passages run. On looking upwards there is a large round perforation seen passing perpendicularly through the rock, and forming the channel by which a stream of vertical light is thrown into this singular place. With a little aid from the imagination, it would not be difficult to suppose this the portico to some great structure, to which the passages led off on either side, and the peculiar illumination of the space from above might lend reality to the conjecture. In the popular appre-

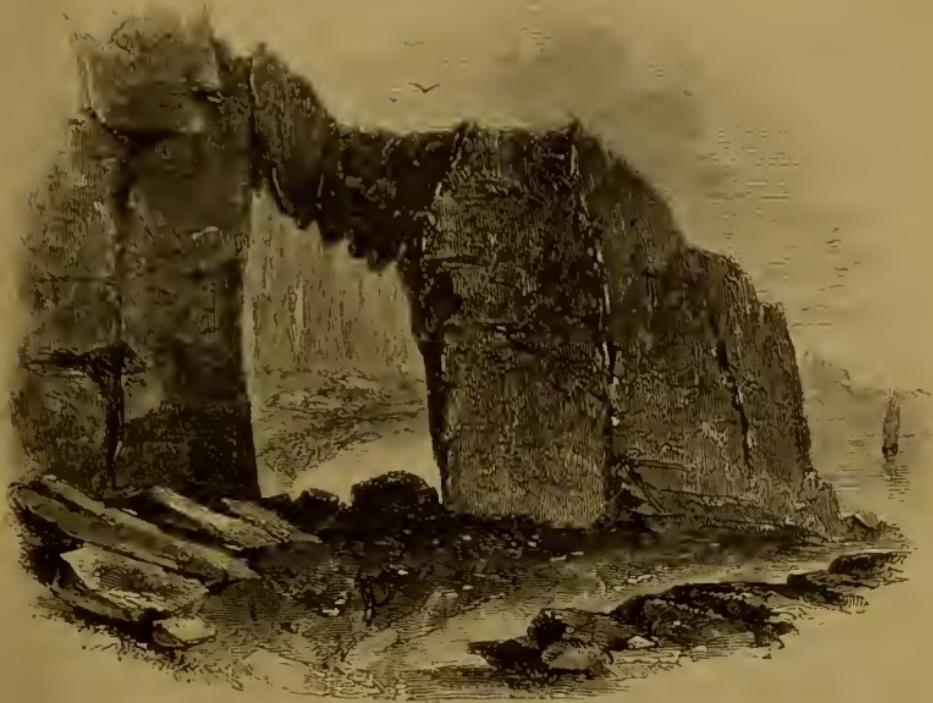
hension the spot is already occupied, and has long been tenanted. In the eyes of the naturalist, however, the Fairies' Cave is merely a further evidence of the power of the united agencies of the atmosphere and the waters.

From what has already been said it will be evident that these excavations may be accounted for on ordinary principles ; and it would form an interesting occupation for any naturalist's leisure, to examine these physical features of the Channel Island rocks. Their origin is undoubtedly traceable, in most instances, to the existence of a dike or vein of softer rock enclosed within a mass of much more resisting nature. If it be supposed that this vein were fissured at the top, and then percolated by water, as in the instances at Herm, whilst laterally its seaward edge were within the reach of an impetuous tide, we have all the necessary conditions for the production of the Creux. The disintegration of a mass placed in these circumstances would be rapid. The outer masses being swept away by the waves, the interior perpendicular mass would come to be acted on by the combined forces of atmospheric disintegration, and of the attrition of masses of stone dashed against its base by the waters. In process of time portions of this softer column of stone, already softened and

fissured by the weather and the percolation of water from above, would give way at the bottom: these would in time be removed by the waters, until the whole mass had fallen and been removed in successive portions, leaving a right-angled excavation, such as we have described. If this be a correct explanation of the formation of these curious cavities, it would not be difficult, on exploring the coasts of these islands, to adduce numerous instances in which the processes in question would seem to be going forward. The lapse of time necessary must, of course, be considerable, although possibly not so long as might at first have been anticipated. The ultimate result of atmospheric influence, added to the destroying effect of the waves, would be to bring down the mass of rock forming the side of the Creux nearest to the sea. And on the coast of Jersey, near the place called Plemont, an instance of the completion of this work of destruction may be seen. A hollowed perpendicular excavation is found, at the upper end of which a little rill trickles down, and the masses of rock below seem to have once formed a portion of one of these curious Creux.

In concluding this chapter on the caves of the Channel Islands, we may be allowed to add, that much pleasantly occupied time was spent

in their exploration; and that while they afford an interesting study to the geologist, they have also attractions for the botanist in the numerous native plants to be found in or near them, and for the zoologist in the lively contents of the sparkling pools of salt-water which they often contain. It may be useful, however, to add, that with a rising tide their exploration is a dangerous task, and might lead to very alarming results, as many of them are liable to be so surrounded by water as to leave no chance of escape to the too venturesome explorer, who had entered them at the wrong opportunity.



PERFORATED ROCK AT SARK.

CHAPTER VI.

THE WATERS.

To those who are at all familiar with the chemistry of the sea, the fact that on approaching the Channel Islands they are nearing some rocky district becomes evident by the colour of the waters. This subject has scarcely met with the attention it deserves, and it may, perhaps, be questioned whether out of the numbers who visit these islands, there are more than a few who have even made the inquiry as to the cause of the beautiful blue colour of the

waters, which is one of the first phenomena attracting general notice. Perhaps the contrast between the colour and transparency of the waters which lave these islands, and those which wash the English shore from Southampton Water up to the north, is best observable on returning from the islands to that town, as this passage is commonly made in the daytime. The beautiful and intense blue of the sea is perceptible for many miles after the steamer has quitted the port of Guernsey, but before reaching mid-channel, the colour begins to lose its intensity, and shades into a yellowish green, which continues with little alteration until the English coast comes in sight. At this point, the green colour begins to fade, and a tinge of light brown is intermingled with the yellow, and remains of the green. The transparency of the waters diminishes in the same proportion, until, at the shore itself, they become positively charged with mud and sediment, the colour of which varies with that of the land forming the coast. But in consequence of the predominance of chalk at the Isle of Wight, at the point where the current is most impetuous, a milky hue is the prevailing tint communicated to the sea, and its degree and extent can scarcely be imagined by any who have not observed these points.

There is a certain gratification afforded by being able to supply to the inquiries of our own mind the scientific explanation of apparently the most insignificant phenomenon. Even, therefore, if the colour of the sea were a subject less philosophically important than it is, we should consider it deserving of a passing attention. But in reality this phenomenon, which, it may be observed, has engaged the attention of many learned philosophers, is an extremely interesting one, and the cause of the peculiarly intense blue colour, and exquisite transparency of the sea around these islands, is explicable on simple, but very interesting principles.

The tides of the English Channel exercise an important influence upon those abrupt and enduring rocky masses which oppose the transmission of the tide-wave along the channel. We presume that it is scarcely necessary to observe that the phenomena of the tides are in reality produced by the transmission of a great wave of water having its origin in the ocean, where it has been formed by the attractive influence of our attendant satellite, the moon, or, at spring-tides, by the coincidence of the action of the sun and moon. The large mass of water thus raised can only expend the force it has acquired by pushing before it other masses of water, and, consequently, raising them too in the form

of a wave. In this way the wave originally generated in the ocean travels onward long after the forces which formed it have ceased to act on the first mass of water. The Antarctic sea has been called the cradle of the tides. It is here that the sun and moon have presided over their birth; and it is here also that they are, so to speak, abandoned to their own guidance. The luminaries continue their apparent course from east to west, but the tides no longer follow them. The great tide-wave travels hence through the Atlantic, at the rate of a thousand miles an hour. On the morning of the second day of its existence, this wave brings high-water to the western coasts of Ireland and England. At midnight of the second day the wave, having turned the corner of Scotland and descended the Channel, reaches the mouth of the Thames, and, on the morning of the third day, wafts the merchandise of the world into the port of London. But the tide-wave which arrives from the Atlantic on the south-western extremity of the British Islands, pursues a different course. One great wave, thirty-nine hours old, is seen approaching the British Islands from the Atlantic, and, proceeding in a north-easterly direction, strikes on the south-western promontories of France, near Brest; of England, off Falmouth; and of

Ireland, off Cape Clear. This wave carries high-water along the southern coast of England, and the opposite coast of France, and so proceeds up the Channel, until it meets the wave descending it.

The wave thus proceeding from the Atlantic strikes the projecting coast of Normandy, fills the bay of Mount St. Michael, and then continues its course along the islands, and round Cape la Hague up the English Channel. It was the observation of a competent writer, some time ago, that the directions of the tidal currents on this side of the Channel turn in twelve hours, in the opposite direction to that of the hands of a watch. But in consequence of the innumerable rocky projections which break the current, and of the position of the islands themselves, a great variety of currents of a minor kind is the result, the intricacy and rapidity of which render the navigation of these seas extremely difficult and uncertain. So rapidly do these currents succeed one another, that at no period of the tide is there still water. Even in calm weather, large portions of water in violent commotion are seen whirling and eddying round in a manner likely to give alarm to the inexperienced in these currents. Upon many of the elevated parts of Guernsey, and particularly of Sark, we have watched the tidal current

rolling past, and its direction and rapidity were as strongly marked as if the waters had formed part of some impetuous and majestic river. Near the north-western extremity of the latter island, in particular, where bridges of detached rocks stretch out seaward, the current is extremely rapid, yet the fishermen alone in their boats, moored in these impetuous waters by a single rope, the surge beating against its bows, and eddying around the little craft, have little difficulty in mastering the current, and gain the land again. The base of the rocks is white with foam in the most serene weather. Through the narrow passage which divides L'Ile des Marchands from Sark, the tidal stream flows also with great impetuosity, and the current has received the name of the Gouliot stream. As we passed in a small boat twice through this current, and beheld the strength of its impulse against the rocks, which project in the midst of it, we could not but ask how long it was possible that even the hardest materials could withstand its attacks? In any but tolerably calm weather even the Sark boatmen, who constantly cruise about among these waters, have a dread of the Gouliot streams. It has been observed, that only the fishermen who continually frequent the waters around their own island are properly acquainted with

the intricate currents which affect the movements of the waters; and that the boatmen of other islands will not undertake the navigation of other waters than those with which they are themselves familiar. It is of not unfrequent occurrence that persons adventuring to sail in the sea around these islands, become carried to a far greater distance than they desire, and are often detained for many hours among the opposing waters.

The currents about Alderney have long enjoyed a popular reputation for velocity and impetuosity, and not without justice. Avoiding notice of the minor currents, the "Race of Alderney" and the "Swinge" are tidal streams as impetuous as can well be conceived. The Race is on the south side, between Alderney and the French coast, the Swinge is on the north side, between Alderney and the little island of Berhou. The current which runs through the Race of Alderney has a velocity of about eight English miles an hour, and the appearance of this great tidal river when its waters are buffeted by a contrary wind is very fine. The Swinge, though a much lesser current, is not less swift, and is more dangerous than the Race. Through this narrow passage all vessels from England or the neighbouring islands to Alderney must pass, and though the

water is deep, the rocks which appear protruding above its agitated surface give an unpleasant sense of danger. Through this passage the tide pours a vast volume of water, which, meeting with a variety of obstacles seen and not seen, is thrown into a state of violent commotion, and its surface eddies and tosses about in a highly threatening manner. Occasionally it is quite impossible to stem the current, and the traveller may be detained for a disagreeable length of time an unwilling prisoner in the island.

It has always been considered that these conflicting and impetuous currents which we have noticed are among the best defences of these islands. A manuscript account of the Channel Islands, with a detailed statement as to the best means of their approach, was kept from the reign of James the Second till about the close of the last century, as a state secret. It was then published for the benefit of the ships sailing to the respective ports. The date of this singular manuscript is 1685, and a minute account of the rocks and anchorage is contained in it.

The height to which the tides rise on these shores is considerable, although not equalling that on the shores of St. Malo. The height of the tide in this, as in all other cases, is affected in a great degree by the figure of the shore, the form of the bottom, and the direction of inci-

dence of the tidal wave. The more slowly shelving and nearly uniformly sloping the bottom, the higher the rise of the tide, and such is peculiarly the nature of the bottom in the Bay of Mount St. Michael. So slight is its declivity, that the ebb of the tide lays bare an extent of shore amounting to from twelve to sixteen miles in depth, and the bay is filled over this large extent of surface in about two hours. The result is, that the range of the tide is elevated to an extraordinary height. At St. Malo's it is said to exceed fifty feet; at Guernsey and Jersey the elevation is less considerable, and only amounts to from thirty to forty feet. Yet this greatly exceeds the height of the tides on many parts of the coast of England and Ireland, and, singularly enough, even on the opposite coast of England, as at the Bill of Portland, where the rise does not exceed eight or nine feet! It is easy to imagine that the periodical rise and subsidence of water attaining this height upon a coast abounding in rocks, must give rise to a number of powerful currents.

The depth of the sea around the islands exhibits some remarkable variations, but on the whole the bottom is tolerably uniform. The average depth of water in their neighbourhood is about thirty-five fathoms, and it is scarcely anywhere more than forty. Between Jersey and

the opposite coast of Normandy, the water is in many places extremely shallow. For more than one-third of the distance between the fatal rocks Les Minquiers and the town of St. Malo, the water is so shallow and the bottom so broken, that it is considered impassable for ships. In some parts the depth of water is only from two to five fathoms. A large part of the sea also on the north of the island of Herm, and on the west of Guernsey, is shallow. Many circumstances appear to indicate that the sea now occupies a larger extent than it formerly did, and that an extensive tract of land has disappeared, and as this forms a very interesting part of the natural history of these islands, we shall devote some space to its consideration.

The traditional history of a district is often of service to the geologist, not so much in supplying him with accurate information, as in directing his investigations into subjects which he might not otherwise have considered worthy of his attention. He is thus often enabled to expose the little nucleus of truth around which fable has concreted much extraneous matter. The tradition is current in the Channel Islands that they were once connected with the opposite coast of Normandy, and that some great catastrophe separated them from the main land. On the opposite coast a somewhat analogous tradi-

tion is on record, and the question of the primitive union of the islands with this part of France has consequently often been raised. Among the numerous exploits attributed to Arthur, was one which gave him the memorable title of "Uter pen dragon," the conqueror of the dragon. This celebrated victory is said to have taken place in a forest near Morlaix. This forest is now nowhere to be found, having disappeared together with other woods which have a traditional existence. "In 1812," observes Mr. Lukis, "the Comte de la Feuglaye discovered after a violent storm which had devastated the shore near Morlaix, in the very place where it was related that a forest once existed, an immense area of vegetable matter, consisting of large trees, and other detritus of the same nature, and in the same state of preservation as we find the Gorban on our own coast. He further states that the oak and the beech predominate among these interesting remains, but that the latter tree is now scarcely to be seen in Brittany." In exploring the Celtic remains of these islands, certain indications confirmatory of the existence of this submerged area were perceived.

The following extract from Dugdale's *Monasticon* is quoted by Pleyse as in some degree establishing the fact that Jersey and Normandy

were at a past period much nearer each other than at present:—“Bernard d'Abbeville, to avoid being chosen prior of St. Cyprian's, proceeded to the borders of Brittany, into the peninsula of Chauvez, on the north side of that province.” This peninsula of Chauvez is supposed to refer to the rocky island of Chauvez, to the south-east of Jersey. Jersey is also mentioned in some ancient records as an island off the shore of Coutances, an expression which in its present relation to the coast of France would scarcely be justifiable.

A favourite legend having reference to this subject is that Jersey was once so near to France, that persons passed over on a plank or bridge from the island to the main land, paying a small toll to the abbey of Coutances.

Of direct historical evidence there is little or none upon which reliance can be placed, relative to the whole matter. It is probable, therefore, that if this union had ever in reality existed, it must have been at a very remote period, to which, indeed, the traditions that exist appear dimly to point.

The question then arises, To what physical phenomena was this separation, presuming it to have taken place, attributable? Two explanations may be given, but in both the destructive influence of the sea is directly concerned. It

must have been due either to the general subsidence of the whole district, or to the invasion of lands originally lying at a low level, by the sea, on some extraordinary rise of the waters. That there is no violence in the former of these suppositions,—namely, in that of a general subsidence or change of level of the whole district,—will be readily conceded by the geologist, who is familiar with the records of such phenomena. Numerous instances exist where districts of vast extent, greatly superior in point of area to that under consideration, have had their level materially altered by the action of powers of elevation or depression exercised in the interior of our planet. Whole countries are at the present day undergoing a change of level, and it is not improbable that England itself has been subject, over large tracts of land, to these vast alterations of the condition of its surface. Such a change may, consequently, have affected the district in question. It has been thought that the low lands of Guernsey have been invaded by the subsidence of the rocks upon which they rest, no alteration of level having taken place in the high ground. But a little attention to the conformation and position of the rocks in this island will be sufficient to show the incorrectness of this conclusion. The rocks of gneiss, and those of that series associated with it in the

structure of the high land on the south of Guernsey, are in exact geological relation with the granite on which they rest, and which extends to the northern coast of the island. There is no appearance of disturbance of level in their order of superposition, and the slight deposits of alluvial matter which rest upon the granite bed of the northern half of the island sufficiently indicate the fact that the surface on which they have been deposited remains unaltered with respect to its relation to the other parts of the island. In a word, this part of Guernsey exhibits no traces whatever of its having been depressed while other parts remained in their original position.

We are brought consequently to this conclusion, that if the land has subsided in this district, so as to expose it to the destroying influence of the sea, this subsidence must have been a general and not a local disturbance of level. The whole district, and not any one part of it, must have been lowered, and to this opinion, although it is contrary to that of some eminent in geological science, the parts brought under my own notice lead me. There is an ancient gateway between the islands of Herm and Jethou, now half buried in the waters. The large round perforation in one of these upright stones is plainly of artificial origin,

and formed in fact the hole, through which the posts were secured. The position of these stones does not appear to have been altered from that in which they were originally set up, and they rest, we believe, upon syenitic rock. Formerly a road existed between these islands, which are now separated by a channel of considerable width, with which road this gateway was connected. As the tide rises, these stones are now nearly covered by the waves, and at low-water they are still surrounded by water. At the same time the channel is now impassable, and the only access to Jethou from Herm is by means of boats. Perhaps few facts appear more conclusive than this, of an actual subsidence having taken place, and that within a comparatively recent period.

Although little reliance is to be placed upon the statements of the inhabitants of a district, when scientific information is the object of inquiry; yet these have their importance and their value when they can be supported by collateral evidence, deduced from the physical phenomena of the district itself. Coupled therefore with the foregoing evidence of the sunken gateway, it may strengthen the conclusion arrived at, to learn upon the testimony of an occupant of the island of Herm, that it had

been observed that access to a detached rock at the extremity of Jethou was now only to be gained at a considerably later period of the tide than formerly, an effect which, while probably due in great part to the abrasion of the neck of land by water, may also be in part attributed to the same depression of general level as the subsidence of the causeway and its projecting gate.

Upon the western coast of Guernsey, about three miles from the mainland, are the Hanois Rocks, situated at a little distance from the small island of Lihou. These rocks are now in a great measure covered by the tide, but there is evidence to show that at a former period they must have been if not actually a part of the mainland, yet closely connected with it. A curious discovery was made upon one of them some time ago. Attached to a stone which seemed to have formed part of a gateway, was an iron hook, which appeared to have been part of the hinge. This no longer exists, but it is said that at very low tides, even now evident traces of roads are discernible, in cart-ruts worn into the surface of the rock. It is said also, that an old order for the repair of the roads is still extant. Upon no other supposition than that of subsidence can these facts be explained.

Some account of a large peat-deposit in Vazon Bay has been already given; and the submarine extent of this important formation has been hinted at. The existenee also of various antique remains in this peat bed, as in that of the Bay of Mount St. Michael, has been alluded to. In Jersey, a somewhat similar submarine formation exists. The following extract from a doeument in the British Museum, among the Harleian manuseripts, refers to this faet:—" It is aeknowledged, and the reecords of those times testify it, that in the parish of St. Ouen the sea hath overwhelmed, within these 350 years, the riehest soil of that parish, that is, a vale from beyond the pool towards Lestae in length, and in breadth from the hill very farre into the sea, and that to this day, stumps of oakes are found in the sand during the ebbe, and *some ruines of buildings among the rocks.* The like whereof is also seen in the Bay of St. Brelade. But of late years, within the memory of most men, two great rocks lying one behind another in the sea, at a place called Le Hoe, in St. Clement's parish, the nearest of whieh is severed from the land a bow-shot at full sea, were joined to it, and served many yet alive to dige vraie upon, whieh in former times was the fate of a great tract of land near Mont Orgueil eastle, called Le Banc du Viollet, which ap-

pearcth above water at halfe ebbe, like an island at some distanee from the main land."

In St. Brelade's Bay, Jersey, the singular position of the churh has been before alluded to. It appears seareely eonceiveable that when a choiee of site existed free from such an ineonvenience, a churh would have been reated so near to the water's edge, that at high tide the spray would fall upon the ehurehyard! Such is the present position of this aneient edifiee, and its antiquity may be in some measure taken as an indicatian of the extreme slowness with whieh the depression of level supposed has taken placee. Below the sand with whieh the shore is covered, the roek is syenite, corresonding in point of age to that of Guernsey, Sark, and Herm.

In consequenee of the encroachment of the sea upon the land in the vieinity of St. Ouen's, Jersey, the shore has of eourse advaneed inwards to the body of the island, and the result has been very remarkable. As this bay is exposed to all the fury of the westerly gales, and is not defended behind by high rocks, the influence of the wind upon the sand is very powerful. When these storms blow, they sweep up volumes of the dry sand, and eontinuing their course over the land, scatter the minute particles over the districts lying in

the vicinity of the shore. Beyond a certain distance, it does not appear that the wind has power to transport these particles. The result is, that the whole district over which they are carried becomes bestrewn with constant showers of sand. Now it will be readily understood, that the more remote the shore was, the more limited the inland district thus visited. This part is now called the Quenvais, but there is a tradition that it was not always the sandy, barren, and desolate tract it now is; and below the surface, a soil of vegetable mould is discovered, and remains of buildings have been met with in some places where the sand has been removed. The tradition states, that this district of the Quenvais was overwhelmed in ancient times as a punishment for the inhumanity of the inhabitants, who plundered five Spanish vessels wrecked there. It is unnecessary to inquire into the truth of this part of the account, since the fact of this district having been formerly a fertile and inhabited spot, is that which is of the most importance to our inquiry. If, now, it is imagined that the sea extended with slow but sure progress its invasions upon the island in this quarter, so as to bring the shore nearer to this once fertile tract,—then it is easy to foresee the result, and to attribute the apparently disconnected events of the

desolation of the Quenvais with drifted sand to the encroachment of the waters upon the island. At Guernsey a somewhat similar result appears to have taken place, but over a smaller area.

But in certain parts on the coast of Guernsey, and also of Jersey, there are indications which seem to show that the present level of this district is, notwithstanding its apparent subsidence, considerably higher than it was at a very remote period. It has been remarked by Mr. Trevelyan, and we have examined one of the localities he describes, that near the island of Lihou, and on the north-west coast of Guernsey, there exist unquestionable marks of ancient sea-margins upon the rocks. In a letter to Dr. Buckland Mr. Trevelyan says, "On the shore near the point where the road descends towards the rock or islet of Lihou, on the east of Guernsey, may be seen a section where, above the present high-water mark, the granite bears evident signs of having been worn by the action of the waves, previously to the deposition on it of a bed of gravel which now covers the granite, and fills up the inequalities of its surface. The gravel, which is firmly bound together by a ferruginous sand, consists of pebbles of the neighbouring rocks, also of chalk flints, some not much rounded, and it extends to about eight feet above the present high-water mark,

ranging also apparently a little inland. *On the gravel* is a bed about three feet thick of disintegrated granite, mixed with irregular fragments of that rock, and covered by the surface soil."

On the south-west of Guernsey, near Fort Doyle, a similar gravel occurs, about eight feet above high-water mark, resting principally on the surface of the syenite rocks of a low cliff, but occupying also fissures, which Mr. Trevelyan is of opinion were formed during a slight elevating movement, and into which he believes the gravel fell, and was even forced laterally under the syenite. The gravel is in parts so firmly cemented by a ferruginous sand, as to be able to support the roof of a small cavern where the substratum had been washed away.

From the facts which have been advanced, it appears to follow that the district occupied by the Channel Islands, and probably part of the coast of Normandy, has experienced two decided changes of level. From the evidence afforded by the raised beach at Lihou and elsewhere, it appears that the district was, at a remote period, at a much lower elevation than it now possesses; that it subsequently became elevated to a little above its present level, and that at the present time a slow process of subsidence is taking place. In explanation of the origin of

the beds of gravel near Lihou, and on the north-west of the island, Mr. Lukis, whose opinion deserves the utmost attention, considers them to be accounted for as simply resulting from the carrying down to this lower part of Guernsey the detrital matter from its elevated southern part. But it is adverse to this opinion, that an apparently similar and, probably, identically formed bed of gravel exists among the cliffs on this southern coast; and it is also to be remembered, that the rivulets in this island, to the transporting power of which this gravel is attributed, are very minute rills, the velocity and strength of current in which appear scarcely equal to the effect ascribed to them.

Whichever of these opinions is entertained, there neither is nor can be any question that the extent of superficial area now occupied by the waters visibly exceeds that which formerly they possessed.

The strongest evidence of the mechanical power of the waves on these coasts, is afforded by the groups of stern and rugged rocks which stud the surrounding waters. There can be little doubt that most of these rocks, whose detached summits cover the waves with forms terrible to the mariner, originally formed a part of the solid ground, and that some were even occupied by men. We have already alluded to

the singular masses of detached roek on the coast of Sark, called the Altars. These masses are monumental tokens of the force and fury of the waters. Near this spot is another remarkable evidence of their power. A very large wall of a reddish granite, the end of a vein from which the schistose strata had been washed, stands far out on the shore, forming a natural arch. Where the arch is formed, a softer cross fissure seems to have existed, from which the looser materials have been washed away. The cut at the head of this chapter represents this roek. The detachment of the isle of Breehou (L'Ile des Marehands) from Sark may, perhaps, be partly attributed to the same power. The roek called St. Pierre, which stands in the middle of the Gouliot stream running between this island and Sark, is clothed at the top with a green capping of turf, upon which occasionally a few sheep are turned out to graze, and it presents much of the appearance of a mass whose sides have been wasted by water. The considerable angle at which the roeks incline at this part, and the existence of fissures in them, extending to some depth, may have facilitated the removal of the material, as their inclination is exactly across the direction of the stream. There are several other of the little islands surrounding these coasts, whose separation from the main body of

their respective islands must be attributed in some considerable degree to the mechanical force of the currents which sweep along them.

Some interesting experiments have been made, with a view to determine the force with which water, in the form of currents and waves, influences substances exposed to its action, and it has been found that water, when flowing at various rates per second, has the power of transporting materials of considerable weight and size. Its force, however, in this respect is chiefly felt on land and in mountainous countries, where rapid streams rush down the sides of steep declivities. Yet even among these islands the transporting power of the incessant currents which wash their coasts is considerable. The chief mechanical power is that of the waves, and that this must be vast in its character and results will be best appreciated by those who have stood on the south-western coast of Guernsey during a gale. At a point near Pleinmont on this coast, the fury of the waters is felt more than at any other part of the island.

On the coast of Jersey, while wandering among the rocks on its northern coast, a curious example of the power of the waves was encountered. It was a basin of considerable size scooped out of the rock, at the sea

level, and filled with large water-worn and rounded blocks of stone. These blocks did not seem to have fallen from the rocks above, but appeared to have been lifted up and deposited in the cavity by the force of the waves which incessantly strike upon this rugged and precipitous coast. And when it is remembered that stones as well as other substances, heavier than water, do not weigh as heavy in water as in air, in consequence of the amount they displace, this will appear less improbable.

It is often difficult to appreciate the effect of causes operating chiefly through prolonged epochs, and it becomes more easy to estimate such as produce an immediate effect. The effects of the violence of the waves on this and on other of the exposed coasts of the Channel Islands, in the disintegration of the rocks, and the removal and upheaval of masses of stone, can scarcely be appreciated by those unaccustomed to the contemplation of such forces; and it may, therefore, be useful to mention, that the most undoubted evidence exists that the waves of the sea possess the power here ascribed to them. During the period of construction of the Bell-rock Light-house, abundant opportunity was afforded of estimating the upheaving power of the stormy waters, in the midst of which that structure has been reared. It has

been stated by the engineer employed, that drift rocks measuring upwards of thirty cubic feet, and weighing not less than two tons, have been lifted up from the deep water around during a storm. Evidence also of the upheaving and transporting power of the waves is abundantly afforded in certain parts of the rocky coast of the Shetland Isles, where great masses of stones have been carried away and deposited in heaps by the waters, resembling an accumulation of quarried masses more than a heap raised by natural forces alone.

At one extremity of Little Sark a more conspicuous monument of the power of the currents which sweep around it appears, in the form of a perforated rock standing up out of the water, and in form resembling the solitary arch of a bridge, the remaining portion of which had been washed away. It is a mass of great strength and of considerable size, but its sides are exposed with ruinous effect to the impulse of the powerful current which sweeps around this island. There can be little question that it was once solid, and probably connected with the rock of Little Sark. Its peculiar position, however, rendered it particularly obnoxious to the battering power of the waters, and a softer vein of rock existing near the middle first yielded to their influence. The breach once

made, was rapidly widened, and a tunnel has now been cut completely through the mass, through the foaming sides of which a roaring tide rushes along, carrying away continually fresh portions of the rock, and gradually though imperceptibly enlarging the cavity, and preparing the mass for total annihilation when its outer side is worn through.

The impetuosity of the currents around Sark has more than once proved fatal to adventurous persons. A very memorable instance occurred some years ago, which filled many hearts in the island, and in others of the group, with sadness. A party of persons who had arrived from Guernsey were overtaken by bad weather, and were advised not to attempt the return passage in consequence of the furious tide running through the strait between the isle of Breehou and Sark. Disregarding this counsel, they embarked, and for a certain distance proceeded safely, until they encountered the Gouliot current, as this tidal stream is called. Here, in the midst of a vain struggle against its force, the boat upset, and every soul perished in a moment, while a few spectators on the high land close by the scene looked on in agony, without the power to render the least assistance.

It is dangerous in boisterous weather to stand too near these impetuous waters, for the long

swell occasionally reaches to the very feet of the spectator. One of the persons employed in the mines at Sark was engaged in contemplating the grandeur of the waves as they broke upon the rocky coast at the foot of the mines, and, heedless of the danger to which he was exposed, he ventured yet nearer to the edge. While thus situated a larger wave than the rest suddenly broke over him, and carried him instantly into deep water, where he perished, nor was his body ever recovered.



STACKS OF SEA-WEED, ALEXANDER'S HOTEL, GUERNSEY.

CHAPTER VII.

THE PLANTS AND ANIMALS.

SEVERAL circumstances combine to render the Channel Island marine vegetation extremely interesting, and more extensive than it is on many rocky coasts. In speaking therefore of the plants of these islands, we shall begin at the sea-shore: and in so doing, we must recall to the attention of the reader the statement made in a former page as to the extent of the tides in these islands. The perpendicular height of the highest tides is about thirty-nine feet; it may therefore be easily conceived that

at the fall of the tide a large extent of coast is laid bare,—and this of a nature peculiarly adapted to the requirements of marine plants. It is now generally admitted that sea-plants are much less dependent upon the nature of the soil—if we may so term it—on which they grow, than plants living on the land. It has been shown by Liebig that marine plants generally live not so much by the materials derived through the medium of the root, as by absorption of the elements they require in the form of soluble compounds, or solutions of gases, by their entire surface. Land plants, on the contrary, derive all their saline and earthy constituents by their roots from the soil in which they grow—their woody tissue being formed by the absorption of carbonic acid from the air. To the latter it is consequently of the most vital importance in what soil they grow. Sea-weeds in their maturer stages require little assistance from their roots beyond that of retaining them to the rocky surface: in their earlier conditions these organs may be more important. Consequently, the geological nature of the district is of little importance to the marine plants, provided that its outward form is such as adapts itself to their requirements.

The form of the coast is therefore of more consequence to the number and variety of its

marine vegetation than its chemical constitution. Now, the general face of a granitic coast is unfavourable to the growth of sea-weeds, because its rounded and lumpish character generally forbids the existence of those little rock-pools where the water can lie until the return of the tide, and in which sea-weeds delight to luxuriate. "And thus," observes Professor Harvey, "the vegetation of granitic shores may be characterized as poor; but this poverty is owing altogether to outward form. For wherever the granite affords a tolerably flat surface, intersected with deep cavities in which pools of water are constantly maintained, a vegetation will be found as varied and copious as on stratified shores of a totally different composition of rock."* The coasts of the Channel Islands are in many places remarkably beautiful, in consequence of the number of these rock-pools,—places where the naturalist may sit and for hours occupy himself in the study of the miniature translucent sea at his feet. Two of the most remarkable of these rock-pools exist on the coast of the little isle of Lihou, and in consequence of the interest attaching to them, we venture to digress into a little description of them, since they are types of many less beautiful in form, but not

* *Sea-side Book*, p. 55.

less interesting to the naturalist, with which the coast of Guernsey especially abounds.

On this little island exist the remains of an ancient priory; and the rock-pools in question are found among the gneiss rocks on the eastern side of the ruins, at about half-water mark. At this spot a vein of felspar traverses the gneiss, and it is partly in this vein that the pools are excavated. We had some difficulty in finding them, and the approach is not an easy one in any direction except from the sea. They are two almost circular excavations in the rock,—the one placed a little above the other, and the water of the upper one dripping over a little ledge into the lower, while a rounded lip carries off the water from the latter, leaving both pools full nearly to the brim. The position of those pools is extremely beautiful, and the quiet repose of their crystal-like waters contrasts well with the disturbed and tumultuous character of the rocky scene in which they are placed. Their dimensions are inconsiderable, and their depth about four or five feet, with a shelving bottom. They are said to have been used by the nuns of the priory, but it appears to me that this is a mere fable, originating in the suggestion that they might have been used as baths,—for which purpose indeed their form renders them singularly appropriate.

larly suited. Unless however the nuns had some easier way of approaching their baths than we could discover, it would be a hard matter for them to get there without more bruises and scratches than a lady might like to endure. They appear to have been formed by the action of the waves, which on this side of the Bay of Rocquaine fall thunderingly upon the coast, and hurl great masses of stones against the cliffs. During storms their violence can scarcely be appreciated by any who have not witnessed their fury.

These pools, diminutive though their size, afforded us amusement and instruction for good part of a summer's day. Their beautiful lining of corallines and sponges, with many minute and rosy algæ; their pellucid and motionless waters, slightly tinged with blue; their animated occupants,—tiny molluscs and crustaceans, the one in leisurely movement, the other darting among the sea-weeds,—presented a picture of a microcosm, a world in little, such as only a rock-pool can display. What is seen in miniature in these pools, is displayed on a larger scale in numbers of others on the southern coast of this beautiful island. How great is the pleasure of watching some of these pools, half-hidden by wall-like rocks above, and opening to the sea through a vista of dark

rocky masses still wet with the waters which for years have been polishing down their once rugged surface! In their clear depths beautiful zoophytes display their flower-like arms, their pink, brown, and blood-red hues making beautiful the grey rocks on which they rest. The sea-weeds there also wave their variously coloured structures, some green, some red, but most of an olive tint; and among them, lurking out of human sight, minute fishes lie, now and then darting across, and again lost among the green leaves of the sea-plants. Limpets abound on the rocks at their edges, and in the fissures in the rock surface are to be found microscopic shells for a whole day's investigation.

In consequence, as we have observed, of the great fall of the tide, and of the extent of surface which is thus daily covered and left by the waters, the littoral zone, as it is called, of marine plants is extensive. But this remark does not apply to Sark, where, although the fall and rise are equally great, yet the perpendicular character of the rocks renders the island almost destitute of sea-plants; and very few species of them, and those chiefly of the coarsest kinds, are to be met with. This term 'littoral zone' is to be understood as denominative of the belt of rock or shingle extending between high and low water-marks. From the re-

searches of Professor Forbes it appears that marine vegetation generally may be divided into that occupying the belt of shore in question, and into another extending from low-water mark to a depth of from seven to fifteen fathoms. The lowest plant of this second zone is a coralline, which does not extend below the depth of sixty fathoms. This subdivision into zones has its foundation in a natural arrangement, which, with few exceptions, is found to regulate the distribution of sea-plants. The plants in the littoral zone are those which are adapted to the measure of light, air, and duration of immersion found in that region of the coast; those of the second zone are plants whose requirements in each and all of these respects are such as to confine them to a locality in which constant immersion and a subdued and faint allotment of light are given to them. The peculiar brilliancy and transparency of the waters around the coasts of these islands cannot fail, consequently, to exercise some influence upon the distribution of the marine vegetation, since light is one of the agencies, the intensity of which in some degree determines this fact. Within the littoral zone a large proportion of the sea-weeds of our latitude is produced. The remaining species and genera occur, with the

exception of a few which extend into deeper water, within the limit of three or four fathoms beyond the lowest water of spring-tides.*

The prevailing colours of the sea-weeds which the naturalist meets with in still weather upon this rocky coast, are olive and green. But during storms the deeper plants are torn from their fixed abode, and cast by the violence of the waves upon the shore. The prevailing colour of these is red. This interesting fact is due to the modification experienced in the relative intensity of the light received by the marine vegetation. And it is a remarkable result of Professor Forbes's dredging researches, that the same law has been found to apply to the animal world of the deep. It is highly instructive to mark the various gradations of colour, from green to a pale olive, which can be traced on many parts of this coast, as of most others where sea-weeds are abundant. In the shallow pools near the base of the cliffs the grass-green *Ulva* and *Enteromorphæ* will be found, covering the broken masses of rock below the surface, and the stones, with a clothing of the richest green. As we walk toward the margin of the sea the green sea-weeds are lost sight of, and olive-coloured plants appear on the rocks, or in the pools, the luxuriance and

* Harvey: Sea-side Book, p. 56.

depth of tone in which increase remarkably as we increase our nearness to the low-water mark. On the shore, among the ruins of the last storm, will be found many withered specimens of the deeper sea-weeds, to obtain which, the dredge must be employed, if they are wanted in their perfectly fresh and living state. The conformation of many parts of this coast is however such, that some of the deep water kinds are often to be found in the rock-pools, where the dark colour of the rock itself, and the shady position of the pool, appear to combine some of the most essential conditions found in their native depths, for their growth in such a position.

A very few remarks will suffice for the *Chlorosperms*, or green sea-weeds, found on these coasts. The beautiful genus known to botanists under the expressive title *Cladophora*, or branch-bearing, has several elegant representatives upon these coasts. The *Cladophora refracta* has been found at Jersey. It is a most delicate and elegant plant, of a pale green colour, formed of a profusion of minute branchlets. Deep, clear, and cold pools are its favourite abodes, generally near the extreme of low-water mark. Another species, *uncialis*, appears in the form of shaggy, deep-green rope-like tufts, and grows on the rock. An-

other, and the most beautiful of all, *Cladophora falcata*, whose delicate green feathers curve into the most graceful forms, is also found in deep rock-pools, and was found in Jersey. And a fourth, a very rare species, *C. repens*, was picked up on the beach after a heavy gale at Jersey. Of the genus *Codium*, the species *tomentosum* is frequently met with on rocks, near low-water mark; it may be known by its bright green colour, its curious and often-repeated forkings, and particularly by the fact of its entire structure being invested with a downy coat of the most delicate filaments; this can only be seen when the plant is in the water. It is a curious fact, that this plant, unlike many other sea-weeds, is a cosmopolite,—is found, that is to say, on almost every shore in almost every country. Among the pools may also be found the soft and green feathers of the elegant *Bryopsis plumosa*. This little plant appears, in common with the rest, to discharge a most important office in the aëration of sea-water. “Few of our marine plants,” observes Professor Harvey, “are more beautiful; and the pleasure of admiring its graceful characters may be indefinitely prolonged, as it is one of the plants which may be most easily grown in bottles of sea-water. While it continues to vegetate it will keep the

water sweet and pure, and no eare is needed, except to close the mouth of the bottle so as to prevent evaporation." Among the *Confervæ* are some speeies whieh, in various parts of the coast, cover the roeks with a green eoating, upon whieh a safe footing could not be obtained, were it not for the naturally rough and fissured state of many of the roeks. At Jersey have been found the rigid speeies, *C. melagonium*, a green, tail-like bundle of filaments, standing erect at the bottom of rocky pools, near low-water mark.* Among the members of the family of *Oscillatoriæ* was found a singular-looking speeies, on the coasts of Jersey, named *Lynghya majuscula*. It thrives at and below half-tide level, and is often thrown up after storms, from deep water. But for its bluish green colour, one might suppose it a tuft of some marine monster's hair. Belonging also to the same group, the green sea-weeds, the *Ulvæ*, or Lavers, are plentifully found on the coasts; the *Ulva linga*, or ribbon green laver, the most delicatey beautiful of the genus, and the *Ulva latissima*, of a bright green, almost transparent struecture, wave their tender fronds in the clear water. The *Enteromorphæ*, plants of grass-like struecture, may also be found displaying their bright green leaves in confined

* Harvey's *Phycologia Britannica*.

groups, under the water, or upon the rocks, near high-water mark.

By the inhabitant of the Channel Islands the whole group of the green sea-weeds (and of the red) is little accounted of; but that of the olive-coloured is considered of so much importance, that it has been taken notice of in the Insular laws, and forms, in fact, a group of plants not less necessary to the prosperity of the islands than is the practice of agriculture itself. These sea-weeds are not, however, known under their scientific terms, but are called under the general denomination of *Vraic*. These olive sea-weeds form, in fact, the great part of the vegetable vesture of the coast, and the luxuriance of their growth will be fully appreciated when we come to describe the purposes for which they are collected and applied.

These olive-coloured sea-weeds, called by the marine botanist *Melanospermeæ*, in consequence of the dark colour of their reproductive spores, extend from high-water mark to a depth of one or two fathoms below low-water mark, and from their size, the luxuriance of their growth, and the extent of the coast surface covered by them, are extremely conspicuous in many parts of these coasts. The genus *Fucus* supplies the greater part of these marine plants. The *Fucus*

canaliculatus grows highest of the species, and is commonly found in scattered tufts on the rocks about high-water mark, where daily it is exposed to the air for some hours. It is often found on rocks where only the spray can reach it, but it does not thrive in such situations. It grows in greatest luxuriance midway between half low-water and high-water mark, and puts out fronds five or six inches in length. It is rarely met with below half-tide, and appears to be endowed with peculiar properties of resisting drought. This species does not contribute much to the vegetation clothing the coast. The *F. nodosus*, or Knotted fucus, is a species which, in consequence of its size and luxuriance, forms a thick vesture for large surfaces of the rocks. This is a large species, and forms a great proportion of the Vraic of the Channel Islands. Its peculiar intumescences in the stem, and the bright orange colour of its spore receptacles, when it is in fructification, render it easily recognisable. Like the last it grows high, and bears exposure well. The *F. vesiculosus*, or Bladder fucus, is equally common with the last, and from its gregarious habits is found covering wide patches of rock as far as low-water mark. It is not, as in some of the northern isles, applied to any purpose of domestic or farm-yard economy, but it,

together with the last, constitutes a considerable part of the Vraie. Its place of greatest luxurianee is near low-water mark, and in still deeper water, where its fronds may be seen several feet long. At and below half-tide level, another species, *F. serratus*, appears. The toothed margin of its leaves distinguishes it from all the other species. This fucus is obtained by the gatherers of Vraie only from the rocks which are uncovered at extreme low-water, and consequently its existenee is of less importance to the farmer than that of the other species. In addition to these species, which are common to all our coasts, there is a plant allied to the same genus, which is found not unfrequently on those of the Channel Islands, but which is a stranger to most of our northern shores; this is *Pycnophycus tuberculatus*. It is found on the coasts of Cornwall, and on some of the south-western shores. It is considered to form a distinct genus, and its peculiar and awkward name is derived from two Greek words, signifying “thick sea-weed.”

Next to the genus *Fucus*, that of *Laminaria* supplies the largest part of the Vraie. The well-known *L. digitata*, commonly known by the names Sea-girdles, Tangle, Sea-staff, or Oar-weed. This plant is to be found abundantly among the rocks, at the extreme level

of low-water, at Roequaine Bay, on the Isle of Lihou, Guernsey. The plant, however, chiefly thrives in deep water, and its beautiful glossy olive leaves form a highly interesting submarine vegetation in many of the bays. Its immense size, the fronds sometimes measuring eight feet in length, and two in breadth, and the stem being sometimes six feet long, renders it a valuable capture to the Vraicker. The *L. bulbosa*, a species which generally grows in deep water, is thrown on shore by storms on the south-western coasts, and is collected by the careful scavengers of the sea-shore. Sometimes a single specimen is a load for one man, so great is the size of its bulb, and of the expanding fronds which proceed from the short stem. The *L. saccharina* is also commonly found among the heaps of Vraie. In other countries this sea-weed is useful for food, but we have not met with any instance of such an application of its properties in these islands. It contains a sweet chemical principle in considerable abundance, which is called *mannite*.

In addition to these genera of sea-weeds are various others, which, though not constituting a large proportion of the Vraic, are nevertheless to be found in it in greater or less abundance. Among these is the Sea-thongs, a curious sea-weed, putting forth from a cup-

shaped frond, which adheres to the rock, long green straps, sometimes reaching a length of twenty feet. The long strings also of *Chorda filum*, known under the various names Sea-whiplash, Sea-catgut, &c. This sea-weed is particularly abundant in the water a short distance from Castle Cornet, where its long and slippery lines lie on the blue surface of the wave in great numbers. From this place we have drawn up specimens some thirty feet and upwards in length.

Among the rarer of the olive sea-weeds, the beautiful *Padina Paronia*, or Peacock's-tail, or Turkey-feather, is to be found. This plant, a stranger to most of our northern shores, finds in the warm and genial climate of the Channel Isles a suitable habitat, and may be found during summer in shallow tide-pools, at half-tide level. Its elegantly formed and painted fronds are seen in beautiful tufts below the surface of the clear water. Its resemblance in the brilliance of its colouring to the object after which it is named, is best seen when under water, the fringes of capillary fibres which adorn it decomposing the rays of light, and giving rainbow colours to the surface. Another curious, but less elegant one, is the *Asperococcus Turneri*, which has been found in Jersey. This extraordinary looking plant de-

lights to dwell in the shelter of the bays, and in deep water. It somewhat resembles, when seen in tufts of a small size, a group of amputated fingers! But occasionally, specimens are found upwards of three feet in length, in deep water. The *Asperococcus compressus*, a sea-weed of less singular character, is interesting as having been as yet only found along the southern shores of England, and on the coasts of the Channel Islands.

The red sea-weeds of these isles require a brief notice prior to a description of the interesting operation of Vraieing. These plants are called Rhodo-sperms, and from the exquisiteness of their colouring and structure, are among the most beautiful and popularly interesting of the whole of the marine plants. They are the inhabitants of deep water, or of deep shady tide-pools. From their habit of flourishing in greatest luxuriance in clear water, the marine flora of the Channel Isles is very rich in these beautiful red-coloured sea-weeds. An interesting kind is the *Crunia Pellita*, which has been found in Jersey. This plant resembles patches of blood, and is found upon the surface of smooth rocks, exposed by the tide. Few would imagine it to be a plant, as it more closely resembles a patch of dry skin. Very varied and extensive is the first of the red sea-

weeds on these coasts. It includes *Rhodymenia palmata*, the Dulse of Scotland, used in many parts for food—an ingredient, according to Professor Harvey, in M. Soyer's soup for the poor Irish, "St. Patrick's soup"—and many others.

The marine botany of these islands has a peculiar interest, in consequence of the use made of the sea-weed by the farmers and agriculturists. Sea-weed is known all over these islands under the general term *vraic*, and this term includes all kinds of marine plants gathered at certain seasons, or thrown on the shore by the violence of the waves. The word has a resemblance to *wrack*, an obsolete word equivalent to the modern *wreck*.^{*} Sea-weed cast on shore is often called sea-wrack. On the adjoining coasts of Normandy and Brittany sea-weed is called *varech*, a term evidently identical with *vraic*. The principal use of the *vraie* is for manure, and for this purpose it is highly esteemed.

It is well known to chemists that marine plants contain a large proportion of mineral ingredients. If a dried fucus were burnt, and the

* In legal phraseology "varech de mer" is equivalent to the English term "wreck of the sea," meaning whatever is cast up by the waves. In Normandy and Brittany sea-weed is called "goesmon," and sometimes also "varech."

ashes collected, they would be found to contain a good deal of the alkalies potash and soda; and if dissolved in water, the solution would give evidence of its alkaline nature by turning reddened litmus paper blue; or if a few drops of vinegar were dropped into it, it would effervesce, in consequence of the combination of the acid of the vinegar with the carbonates of the alkalies which it holds in solution. This fact has been known to the dwellers on seaweed-covered coasts for many years, and has been turned to good account in time past. In the Scottish Islands and Highlands the collection of sea-weed, first commencing on a very limited scale, ultimately attained immense importance, and the revenues derived by landed proprietors from the sale of the sea-weed on their coasts were very large. This sea-weed was called *kelp*, and was burned on the shore for the sake of the ashes which it yielded in incinerating the dried plants. Heaps of smoking kelp-fires studded the shores of these districts in the gathering season, and filled the air with a peculiar odour, which extended for many miles. The fusc'd ashes of these plants, called kelp, were collected and sent to be purified.

This was for a long time the principal source of the soda used in commerce and the arts. For the ashes, on being dissolved in water, were

found to be very rich in this alkali, and many tons were every year extracted from it. In addition to the alkali, various other substances, as iodine and bromine, were also obtained from the kelp. But immediately on the reduction of the duty on common salt, the greater part of this branch of industry was swept away. By an ingenious chemical process manufacturers are now weekly manufacturing hundreds of tons of soda from the decomposition of salt; and the kelp-burners and gatherers have lived to see their occupation entirely pass away from them.

In the Channel Islands the vraic represents the kelp of the northern gatherers, and although not collected with a commercial object, it is still gathered and valued because of its mineral components, which tend to enrich and reinvigorate the exhausted soil. It will be readily understood that in these little islands, whose whole area might be comprised in some of our large estates in England, land is very valuable, and is taxed to the utmost limit of its productive powers. This is rendered still more inevitable in consequence of the custom of dividing the land among the children of the owners of the soil. The islands are consequently parcelled out into the most minute portions, each belonging to some separate freeholder. The result is obviously to reduce the proprietors of the ground

to the necessity of the most careful tillage and abundant manuring, to keep up the fertility of their land. Hence the vraic comes to be of such general use, and so highly valued, since it meets the requirements of the agriculturists ; and it may be had in sufficient abundance to be a cheap as well as an efficient manure.

The collection of vraic is not confined to the large landholders, but is common also to the poorer ones, and the latter turn it to good account in the following manner. The sea-weed is gathered by them, dried, and stacked, and in this state is regarded as forming an important part of the fuel for the succeeding winter. A stack of vraic is represented at the head of this chapter. When winter sets in, the dried vraic is brought into use, and forms a tolerable fire, valued, however, rather for the ashes it yields than for the heat it communicates, and were other fuel to be had, it would doubtless be greatly preferred as a source of domestic heat. The ashes are collected with great care, and preserved until a considerable quantity, representing, in fact, many pounds of alkaline and mineral substances, is accumulated. This is then sold by measure, and is used by the farmers and agriculturists. About twenty bushels of such ashes are used to one *vergée* of land.

The following account is derived from a local

author's work on these islands. It gives an interesting picture of the collection of vraic generally, and is applicable in almost every particular to that season in all the islands of the group. "The vraicking season in Jersey is fixed by the island legislature, and is named twice a-year, commencing generally about the 20th July, and the 10th March ; and continuing each time about ten days.

" When the vraicking season begins, those whose families are not numerous enough to collect the needful supply, assist each other ; and the vraicking parties, consisting of eight, ten, or twelve persons, sally forth betimes, from all parts of the island, to their necessary, laborious, but apparently cheerful work. Although a time of labour, it is also a season of merriment : 'vraicking cakes,' made of flour, milk, and sugar, are plentifully partaken of,—and on the cart which accompanies the party to the sea-beach, is generally slung a little cask of something to drink, and a suitable supply of catables. Every individual is provided with a small sickle, to cut the weed from the rocks, and with strong leg and foot gear. The carts proceed as far as the tide will allow them ; and boats, containing four or six persons, carry the vraickers to the more distant rocks, which are unapproachable in any other way.

“ It is truly a busy and a curious scene : at this season, at half-tide, or low-water, multitudes of carts and horses, boats, and vraickers, cover the beach, the rocks, and the water ; and so anxious are the people to make the most of their limited time, that I have often seen horses swimming, and carts floating—so unwilling are the vraickers to be driven from their spoil by the inexorable tide.

“ But this sea-weed is not, as I have said, employed solely as manure, but is also used as fuel ; and for this purpose it is collected at other times than at the regular vraicking seasons,—not from the rocks, indeed, but from the sea-beach ; for of course some of the weed is constantly detaching itself from the rocks, and is borne to the shore by the tide. The collection of this sea-weed is a constant employment with those who live near the sea-shore ; and the produce of their labour is either used for fuel, or is sold to those who want it. At almost all times, men, women, and children, but chiefly the two latter, are to be seen at this employment, gathering or spreading the weed out to dry ; they use a rake, or three-pronged pitchfork, and a wheelbarrow, in which it is carried above high-water mark to be dried. This is the universal fuel of the country, and it makes a hot if not a cheerful fire. Coal is scarcely at

all used; and only a very small quantity of wood along with the vraic, and this even not universally. On feast days only, and family gatherings, a coal fire is lighted in the best parlour."

Upon the surface of the rocks, just above high-water mark, and extending also below it, a peculiar aspect is given by a black coating which covers them as though they were painted. This coating is due to the presence of a minute lichen, called *Collema nigra*. Our attention has been much directed to this subject, both from the peculiar aspect given to the rocks by this lichen, and also from the fact that this black coating seems hitherto almost to have escaped the notice of those who have described the scenery of these islands. The rocks around Guernsey chiefly appear to be thus covered, and in places the coating is so dark as to give the aspect of its having been covered with soot. This is especially observable on the rocks near Pleinmont. The rocks here, from the sea-level to a height of several feet, as high, in fact, as they are washed by the spray, present the appearance as though some conflagration had taken place, and charred their sides and edges. The fact that on such exposed surfaces any plant could exist, and particularly in such situations as at Pleinmont, where the fury of the

Atlantic billow is experienced in overwhelming force, is interesting, and teaches us that the most wild region is not too wild for the maintenance of organic life in some form or other. It is also a suggestive thought, that these minute plants, which thrive where nothing else can live, draw sustenance from the very elements which one might suppose would produce their destruction.

This subject wears an additional interest from the fact that Humboldt, in his travels, has noticed the same blackened appearance of rocks, but offers no satisfactory explanation of its nature. We subjoin the following extracts from his *Views of Nature* :—“ To the south a drear and savage wilderness bounds the steppe. Forests, the growth of thousands of years, in one impenetrable thicket, overspread the marshy region between the rivers Orinoco and Amazon. Huge masses of *leaden-coloured granite* contract the beds of the foaming rivers. Mountains and forests re-echo with the thunder of rushing waters, the roar of the tiger-like jaguar, and the dull, rain-foreboding howl of the bearded ape.”

The following note he gives in illustration of the “ leaden-coloured granite.”—“ In the Orinoco, and more especially at the cataracts of Maypures and Atures (not in the Black River

or Rio Negro), all blocks of granite, and even pieces of white quartz, wherever they come in contact with the water, acquire a greyish-black coating, which does not penetrate beyond 0.01 of a line into the interior of the rock. The traveller might almost suppose he was looking at basalt, or fossils coloured with graphite. Indeed, the crust does actually appear to contain manganese and carbon. I say appears to do so, because the phenomenon has not yet been thoroughly investigated. Something perfectly analogous to this was observed by Rozier in the syenitic rocks of the Nile (near Syene and Philoc); by the unfortunate Captain Tuckey on the rocky banks of the Zaire, and by Sir Robert Schomburgh at Berbicc. On the Orinoco these leaden-coloured rocks are supposed, when wet, to give forth noxious exhalations, and their vicinity is believed to be conducive to the generation of fevers. It is also remarkable that the South American rivers generally, which have *black* waters (*aguas negras*), or waters of a coffee-brown or wine-yellow tint, do *not darken* the granite rocks; that is to say, they do not act upon the stone in such a manner as to form from its constituent parts a black or leaden-coloured crust."

From the fact stated in the above passage by Humboldt, that the coating in question contained

a portion of carbon in its composition, there can be little doubt that it was really a minute lichen. The whole history of this dark coating observed by Humboldt renders this supposition extremely probable, and it is also deserving of notice, that the rocks upon which it was observed were granitic, in this respect rendering the analogy between them and those of the Channel Islands still more close. It is evident, from Humboldt's account, that he regards it rather as a chemical than an organic product. This view, however, does not appear so probable as the suggestion just given.

Among the grasses of the Channel Islands there is one species which is interesting from the uses to which it is applied. This plant, known to botanists as *Cyperus longus*, is called "han" by the islanders, and is used for a great variety of purposes. It grows abundantly in some of the meadows, and is collected and preserved for textile purposes. At the Great Exhibition a very complete set of articles made of this substance was exhibited, including specimens of the raw and manufactured material. Among the manufactured articles was a Guernsey farm saddle, in constant use in every farm for riding, and for carrying bags and panniers. There was also a mat and footstool, and a bullock's and horse's collar made of han. Han is

also made into ropes of tolerable strength, much used by fishermen, and valued from its not being affected as hemp is by salt water. This rope is also used for tethering cattle. The material is less costly than hemp, but is very inferior to that substance in all the more valuable qualities of a textile material.

It will be naturally expected that, in a work such as the present, an account of the beautiful flower, the Guernsey Lily, should have a prominent place.

The very general taste for the culture of flowers and for horticulture prevalent among the inhabitants of the Channel Islands, may be accounted for by the peculiarly favourable nature of the climate assisting the efforts of the florist, and from the fact, that the little plots of ground in the occupation of individuals are of so limited an extent, as to concentrate attention entirely upon their cultivation. A greater number of plants will live and flourish in the open air in Guernsey than in almost any other spot in the north of Europe; and many of those which are natives of warm climates, and are destroyed by the severe frosts of England and France, are capable of enduring without injury the mild and equable winters of the Channel Islands. This is remarkably exemplified in the case of the Guernsey Lily—a plant of peculiar

beauty, but of a very tender and apparently capricious constitution.

This plant has largely attracted the notice of authors. An old writer thus expresses himself on the subject:—"Nature, assisted by the peculiar hand of fortune, has blessed us with this treasure without our asking for it, and the only suitable return we can make for so great a happiness (*i. e.* having the Guernsey Lily!) is in perfecting by art and care what she has so bountifully begun. I therefore heartily invite all lovers of flowers to the culture of the Guernsey Lily,—the great empress of the whole flowery world, and the noblest plant that England can boast of."

The following account of its history has been



THE GUERNSEY LILY.

given by a botanical author of the last century, Dr. James Douglas; and without pledging ourselves to every statement he makes, we transcribe it for its curiosity. It is said to be a native of Japan, and was brought by a French botanist to Paris in 1634, where it flowered. The plant was seen by Kempfer growing in Japan, and known by a variety of names among the natives, who appear to have held it in great estimation. Dr. Douglas is highly indignant against those who denied its Japanese origin, and declared that the idea of such a birth-place only originated in the resemblance of its glittering petals to the kind of varnish called Japanning! "It ought rather to have been concluded," he observes, "that since that workmanship, as well as this plant, came first from this happy island, the first invention of it might probably be owing to the beautiful mixture of colours and sparkles observed in these leaves."

Its introduction into the British Islands "happened by a very singular, melancholy accident, of which Dr. Morison, who no doubt had it from some persons then residing in Guernsey, gives us the following account.—A Dutch or English ship, it is uncertain which, coming from Japan with some of the roots of this flower on board, was cast away upon the

island of Guernsey; the roots were thrown upon a sandy shore, and so by the force of the winds and waves were soon buried in the sand. There they remained for some years, and afterwards, to the great surprise and admiration of the inhabitants, the flowers appeared in all their pomp and beauty. The Lord Hatton was then governor of that island for King Charles II. His second son was by good luck a curious person, and a great lover of flowers, and therefore he not only took care to transplant and cultivate this flower himself, but sent roots of it to a great many botanists and florists in England."

Some of the features of this narrative wear a doubtful aspect, but it may be accepted in place of a better account of the origin of this very beautiful flower. Since the period of its discovery to the present time, it has attracted much admiration, and is cultivated with more or less success in England and on the Continent. Large quantities of the bulbs are exported every year.

The flower certainly presents a very lovely appearance when seen in all its newly expanded glory, and only an imperfect idea of its beauty can be formed from an engraving, even with the addition of careful colouring. The rapturous author above mentioned, confesses his

inability to describe the colour of this flower “with that accuracy and liveliness which it deserves; however, in the main, I may venture to say, that each flower, while in its prime, looks like a fine gold tissue, wrought in a rose-coloured ground; but when it begins to fade and decay, it looks more like a silver tissue on what they call a pink colour. When we look upon the flower in full sunshine, each leaf appears to be studded with thousands of little diamonds, sparkling and glittering with a most surprising and agreeable lustre; but if we view the same by candle-light, these numerous specks or spangles look more like fine gold-dust. What that uncommon appearance proceeds from, or how to account for it, I own I cannot tell, but must leave it to others of better judgment. However, since it is very certain that there is nothing to be seen without the help of the glorious rays of the sun or the adventitious light of a candle, on either surface of the leaf, it would seem as if it were owing to something contained between the surfaces.” In allusion to this gold-spangled appearance, Evelyn says,—

Purple Narcissus of Japan now flowers,
Its leaves so shine as if with golden showers
It had been wet, which makes it far outvie
The lustre of Phenician tapestry.

It would certainly seem probable that the climate of Guernsey has some peculiar characters, which render it in a remarkable degree suitable to the culture of this tender flower. In England it can only be made to flower a second time with great care, and very frequently dies after its first development into blossom. Even in Jersey, which lies within so short a distance from Guernsey, the plant does not flourish as it does in the latter island. There can be little question that it is to the remarkably small range of temperature, that this circumstance is chiefly due. In the succeeding chapter we propose to show how prominent a feature this constitutes in the climate of Guernsey; while on the contrary, that of Jersey, as of our own country, is subject to a considerable fluctuation in the twenty-four hours. A very frequent cause of the death of the Lily in the hands of English florists, appears to arise from negligence in winter, and from cutting off the leaves too early.

It is well remarked with reference to this flower, by the Rev. W. Williamson, that the leaves are the great organ by which the roots are brought to maturity, and as the bloom is the consequence of this maturity, the leaves must precede rather than succeed the blossom. In autumnal bulbs, to an inattentive

observer, the very reverse seems to be the fact; but we ought to consider that if the bloom be produced by the agency of the leaves, the bloom which appears in one autumn must be the consequence of the leaves which sprung up after the decay of the bloom of the preceding year. The beginning, therefore, of their year is when the leaves first spring forth after the decay of the flower, and their use and end is to perfect the blossom for the succeeding autumn.

Reasoning on these principles, Mr. Williamson placed some pots of Guernsey lilies, which had flowered, under the glass of a frame in which melons had been grown the summer preceding, and in which the heat of the tan was very nearly, if not entirely exhausted. The leaves grew luxuriantly; and when they decayed he took up the bulbs, and in the next autumn repotted them in fresh earth, and placed them under a frame as before. They were again taken up and potted in August of the third year, and five out of seven showed blossom in as great perfection as the fresh imported roots.

It would appear from this that the bulbs of this elegant flower need not be thrown away as useless by those who have a greenhouse or frame, as by the protection of glass

alone, without artificial heat, they may be again brought to flower.

Mr. Williamson found that the soil best suited for the Guernsey lily must be very rich, and rendered light by the addition of sand. Care must be taken not to give the bulbs too much water at first, which is liable to cause them to rot.

Mr. Herbert says that the only attention which the Guernsey lily requires at Spafforth, in Yorkshire, is to give it sufficient air while the leaves are growing, that they may be produced strong and dark coloured; to protect the leaves from frost; and to keep the pots, if under glass, near the light; to give a moderate and regular supply of water; and to leave the bulbs nearly dry from the time the leaves decay, about midsummer, at latest, till the end of August, when the flowers should appear. If the bulbs are not left dry early in the summer, the autumnal shoot will be delayed till the season becomes too cold for the proper growth of the flowers or leaves, and the natural course and vigour of the plant will be interrupted, which will afterwards require at least a year to repair the injury it will have received. Whenever the sprouting is tardy, it should be assisted by placing it in a warmer situation. After the expansion of

the flower, if the summit of the pistil do not appear to be thrce-cleft, it is a proof that the temperature is rather too slow to suit the plant, and the leaves will not perhaps push freely without more heat.

The soil recommended by Mr. Herbert, is a good yellow loam without any manure, but they will thrive in any soil that will not, by its moisture, produce canker. They ought to be planted partly above ground for the same reason.*

In Guernsey, every gardener, and almost every farmer who has a piece of garden ground, appropriates a patch to the culture of this favourite flower. Even there, however, the tenderness of the flower is often a source of disappointment to the florist. If a slight frost injures the foliage, it is generally fatal to the bloom. It is of great consequence, observes Mr. Lukis, to the formation of the flower, that the foliage which is produced in autumn should continue in a healthy growing state during the whole rainy season, until it is checked and finally dried up by the hot weather in May and June. The plant then remains dormant till the month of September, when the flowers

* The facts here stated are derived from "The Flower Garden," published by W. M. S. Orr & Co., Amen Corner, Paternoster Row, 1838.

begin to appear. It is only, however, after particularly mild winters that they are produced in remarkable abundance, the average number of flowering plants having been estimated at fifteen to eighteen in a hundred, and for some years past it has not exceeded half that quantity. Very little care is bestowed on the beds of Guernsey Lilies. They are never manured, but merely weeded and sometimes slightly covered with sand. The warmest spots in the garden are seldom allotted to them, and they are usually found under apple-trees, or in other partially shaded situations, not the most favourable to the growth of other plants.

The botanical name of the Guernsey Lily is *Amaryllis Sarniensis*, or *Nerine venusta*. An almost equally beautiful flower is the *Amaryllis belladonna*, which is also largely cultivated in Guernsey and Jersey. This flower is much more hardy than the other, and blossoms with certainty every year, often producing seeds. It may be constantly seen embellishing with its richly coloured blossoms the tiny gardens of the cottages on the road-side.

The climate appears peculiarly suitable to the culture of roots and bulbs, and especially of those kinds whose period of rest is the summer season, and which vegetate principally during the cool and rainy months of the year.

Among the more interesting flowers belonging to the class of winter growing plants, are many species of *Ixia*, *Sparaxis*, and other genera of Cape bulbs. Many of these appear to thrive in nearly the same perfection and beauty as in their native soil; all of them perfecting their seeds, and some propagating in this manner almost like weeds. Many fine sorts, says Mr. Lukis, are frequent in cottage gardens, where, though treated with no particular care, they emulate the commonest flowers in health and luxuriance.

The beautiful shrub called *Magnolia grandiflora*, which is shy of flowering in England, excepting in Cornwall, the climate of which district approximates nearly to that of Guernsey, flowers with the greatest profusion in that island, and attains a very considerable size. Among other tender plants, which in many parts of England are destroyed if exposed to the winter's cold, the following grow in the Channel Islands with surprising luxuriance, and are seldom, if ever, injured by the climate. This list comprises splendid Hydrangeas, which almost grow wild; Fuchsias, which attain a height of twelve to twenty feet in the open air, and a circumference of perhaps thirty feet; and many species of tender Geraniums, which in England require all the care of the florist, and the protection of

the greenhouse for their prescrvation during the winter months. The Camellia Japonica grows with very little care out of doors the year through, and often attains a height of twenty feet. The Bath scarlet geranium has for years been seen clothing cottage walls to the height of ten or twelve feet, with its dazzling blossoms. The Cape heaths also with



LARGE MYRTLE, GUERNSEY

a little care flourish in the open air, and grow with almost native luxuriance. Many of the curious plants of Australia, Central America, and other warm climates, also grow

in the open air. The Myrtle, as may be imagined from the accompanying cut, grows with surprising vigour, and attains a great height and age. The winters of 1837-8, and of 1840-1, proved, however, very destructive to many of these tender exotics, and did a large amount of mischief by their unusual severity.

Many of the fruits produced in these islands also deserve notice from their size and luxuriance of growth. Of these the most delicious and best known is the celebrated Chaumontel Pear. Several trees of this pear are found in every garden. "There must," observes Mr. Lukis, "certainly be something in the soil or climate of the Channel Islands peculiarly suited to this pear, for it seems to attain its highest perfection nowhere else. The French gardeners themselves acknowledge that their own specimens cannot be compared with ours either for size or flavour. Indeed in France this pear is considered inferior to many other kinds. It is exported from the Channel Islands in considerable quantities." The large sized fruit, being destined for presents, is sold at a high price, from 3*l.* to 4*l.* being readily obtained per hundred for pears that weigh from nine to twelve ounces, and 5*l.* or even 6*l.* for those of twelve to eighteen ounces. The smaller ones,

of five to eight ounces, which form by far the largest portion of the crop, are sold by the bushel comparatively cheap. Nearly ten thousand good-sized pears and two hundred and twenty bushels of small fruit were exported from Guernsey in the year 1840. Occasionally these pears attain an enormous size; and one was exhibited some years ago which weighed thirty and a half ounces avoirdupois.

Figs grow in great profusion, and the purple and green kinds are produced in perfection every year. The purple kind is however preferred, and is brought in quantities to the markets in September, where the fruit is often sold at from three-pence to four-pence per dozen. Beautiful grapes are also produced, with the assistance of the greenhouse, and are exported in large quantities to London. Strawberries and Raspberries are also very abundant and it is stated as a curious fact, that the old pine kind, which in England is seldom grown for sale, in consequence of its unprofitable bearing, in the Channel Islands proves more fruitful than any other kind, and is the only one cultivated for the market. In the season it is produced in such large quantities, as to net sometimes only 2*d.* or $1\frac{1}{2}$ *d.* per pound. In some gardens the Seville and sweet orange have flourished, under the shelter of a wall, and

have produced fruit freely. In winter, however, protection is necessary for them.

Even the greenhouse, says Dr. Maeculloch, is influenced by the climate. As an illustration of this, it is well known that the *Heliotropium Peruvianum*, a plant otherwise of sufficiently easy cultivation, is in England much limited in its growth, becoming woody and feeble after it has attained a certain height. In these islands, on the contrary, if placed in the bed of earth in the greenhouse, although no artificial heat be applied, it soon fills the whole space, running over the bed, and striking fresh roots as it advances. But of all those shrubs which require the protection of the greenhouse in England, the *Verbena triphylla* is that of which the luxuriance is the most remarkable in these islands. Here it flourishes even in the open air, and attains the height of a tree of twenty feet and upwards, spreading in a circle of a diameter equal to its height, and its long branches reaching down to the ground on all sides. Its growth is indeed so luxuriant that it is necessary to keep it from becoming troublesome, by perpetually cutting it almost to the root, from which fresh shoots, fourteen feet in length, resembling those of the osier willow, are annually produced.

Dr. Maeculloch noticed another curious fact

connected with the botany of these islands,—the naturalization of a native of very warm climates, the *Canna Indica*. This very tender plant has become thoroughly habituated to the climate, scattering its seeds every year, so as to prove as troublesome as a weed in those gardens where it has been introduced. From this and many similar facts, it will be abundantly evident that the climate of these islands exerts a singularly beneficial influence over many of the tenderer plants originally denizens of a more southern latitude. But it is curious that the harder kinds are not so successfully cultivated. Trees, more especially, are scarcely to be seen of any noticeable size. The high winds to which the islands are subject, and especially the south-westerly gales, have a very baneful influence over the taller species of trees. And it is curious to observe the diversified and stunted appearance of all such as are to be found growing in any exposed situations. Every unsheltered tree soon loses its symmetry, and in the form of its head, slanting away from the south-west, sufficiently indicates the power and direction of the prevailing wind. The luxuriance of the lesser vegetation, and the variety and splendour of the productions of the gardens, contrast remarkably with the sterile aspect of the trees. The latter certainly assist in giving an unfavour-

able impression of the character of these islands to the observer at first sight; and it is only when wandering in the green lanes and sheltered gardens that the prolific character of the soil really renders itself manifest. Ferns are particularly abundant, and may be found in the shady walks, and in the greatest luxuriance hanging from the dripping roofs of the caves on the coast. Many of these plants appear capable of thriving with very little light, and are to be found in parts of the caves, where only a glimmer of daylight can generally reach them. The total number of flowering plants and ferns, exclusive of varieties found in each of these islands, has been thus estimated by an author who gave much time to this investigation.*

Plants natives of Jersey	692
, , of Guernsey	553
, , of Sark	247
, , of Alderney	313
, , of Herm	174
, , of Jethou	113

The total number found in the Channel Islands amounted to 848.

Quitting now the botany of the islands, a few notes may be added on the zoology of the shells, insects, fish, &c. The shells form a rather interesting portion of the natural history of these

* Babington's *Flora Sarniensis*.

islands ; but we shall only notice one or two of the most popularly known kinds. One of the most common of these is the *Ormer*. This word is said to be a corruption of the words *oreille de mer*, or sea-ear, and the name appears to have been given to it from its resemblance in form to that of the ear. The scientific name of this shell is *Haliotis tuberculata*. It is found in great abundance on the coasts of Guernsey and Jersey, and the shells are frequently used for ornamenting in some simple way the outside of the cottages, being often cemented into the mortar, with the inside exposed so as to show its beautiful colouring. It is curious, however, that though these shells are abundantly found in these islands, and consequently at no great distance from the English shores, they are seldom collected on our coasts. In the islands they are so abundant as to be cast aside often as refuse.

Externally, the *Ormers* present nothing deserving of notice, and it is only the interior of the shell which is really ornamental in its character. The shell is perforated with holes, which are intended for the passage of the lobes of the animal's mantle, and are made at regular intervals as it increases in size. It is deserving of notice, that there are seldom more than seven or eight of these perforations open at the same time, for as each new one is formed, the one

nearest the shell is closed up. The animal has a singular appearance in consequence of the double-festooned margin of its foot. In its state of rest it clings with extraordinary tenacity to the substance on which it is fixed, and can only be removed by exerting a very considerable amount of force, although it can detach itself with ease. It is always found near the surface of the water, and on serene nights feeds on the surface vegetation which clothes the shores of the Channel Islands. Ormers are found at low water, attached to the under surface of masses of stone, and on the least alarm they fix themselves to the rock, so as to resist forcibly any attempt to dislodge them.

The collection of Ormers takes place in the months of February, March, and April, when an immense supply is brought to the markets. There is a considerable demand for them for the table, and they are capable of being cooked in a variety of ways, so as to render them an agreeable article of food. The flavour of them when cooked has been compared to that of veal cutlets. The shells have, however, a small commercial value. After the extraction of the animal, they are preserved, and large quantities are thus collected. A sufficiency having been obtained to render their exportation of value,

they are packed in sacks and sent to London. From that city the Ormer shells are sent to Birmingham, where their nacreous or pearly lustre is duly appreciated. Here they are cut for a variety of purposes, and applied to ornament different objects of papier-maché work, and in japanning, in which the brilliancy of their prismatic colouring presents a beautiful contrast with the dark surface in which they are imbedded.

The shell beaches of Herm, the little island lying immediately opposite to Guernsey, have before been noticed. These have been long known to conchologists, and have been ransacked for specimens. For about three-quarters of a mile on one side of this island the beach consists entirely of shells, chiefly of a minute kind, and intermixed with a profusion of broken fragments of shells, but with very little sand or pebbles. Upwards of forty genera of shells, with about two hundred varieties, have been found on these shores. The collection of the shells at Herm is chiefly carried on by children, who take home to their parents all the rare kinds they can meet with. These are in due time brought to Guernsey for sale, and are disposed of at small sums varying with their respective merits and beauty. At Guernsey the shells are made up into a variety of devices,

some of a pleasing and some of an absurd description; and considerable taste and skill is often displayed in their arrangement. The prices of these objects are considerable when they contain some of the rarer shells. Specimens of the latter are also sold to collectors.

The oyster fishery at Jersey is perhaps the most important part of the shell history of these islands, in a commercial point of view. This fishery constitutes the chief support of the village of Gorey, at the foot of Mont Orgueil Castle, in Jersey. The village is most picturesquely situated, as may be imagined from the engraving of this castle, shown on a preceding page, which is a transcript of a photograph taken on the spot. The venerable ruins of the castle rise above it, and a wide sea view is spread before. The oyster fishery occupies the principal population of the town, and has attained a position of some notoriety in consequence of the disputes which are constantly arising with the fishermen of the opposite coast of France. On several occasions these disputes have assumed a somewhat serious aspect, and have threatened to disturb the peace and goodwill which should subsist between such near neighbours. Large quantities of oysters are obtained during the season at Gorey. These are divided into two sorts, the one kind duly

destined for the London market, and the other for consumption in Jersey. The latter, which are coarse, large, and tough, are sent to St. Heliers, where they are used by the lower classes. The former are packed in sacks, and forwarded by the mail steamers to Southampton, and in other ways to Colchester. This is the kind which after a little preparation on the part of the dealers, is called "London natives." At Colchester and other places in Essex are the great oyster nurseries or feeding places, from whence the metropolis and England generally are supplied. Here the oysters collected at Gorey are brought and laid on beds in creeks along the shore, where their size and flavour are rapidly improved. It appears that the waters near these feeding grounds are abundantly stocked with the infusorial food on which the oyster lives, and which renders it fat and tender. The annual value of the Gorey oyster fishery is not less than from twenty to thirty thousand pounds sterling; and a large number of individuals are supported by it.

Oysters are also found on the coast of Guernsey, and a small bed is said to exist near Castle Cornet, but they are not sufficiently abundant to be easily obtained, and are consequently of no commercial importance. Large quantities of limpets are obtained in all the

Channel Islands, and are used by the poorer persons as an important article of food. The quantity of shells exposed over the surface, or occasionally dug up, shows the extensive use of these animals by the early inhabitants; and in some places they are found at a distance from the cottages, and at a depth of many feet below the soil. Beds of limpet shells are not unfrequently cut through in the island of Herm, where it is difficult to account for their accumulation. This mollusk abounds on all the rocky coasts of the islands, and appears to defy the utmost violence of the tremendous seas which break upon them. The scientific name for the common limpet is the *Patella vulgata*. It was formerly believed by naturalists that this animal, after it is once attached to the rock in a suitable position, appeared never after to move from the spot selected; and it seemed to have the property of removing, either by solution or abrasion, some of the solid rock to which it adheres, so as to form a cavity in its surface. This, however, is not the fact. The limpet unquestionably does roam about, but returns again to the same place.

There is little to attract the collector of shells, apparently, to the coasts of Sark; the precipitous and stormy rocks which constitute its boundaries, offering but little encouragement

to their occupation by any of those marine creatures which require the repose and stillness of a sandy shore for their vigour and production. Yet some rare kinds of shells have been found even in Sark, and the collector will not explore it in vain. In some of its caverns have been found some of the univalve shells called *voluts*. These are chiefly the residents of hot climates, and are not ordinarily met with in a living state on other shores. Several species of these shells have been met with in this singular position.

Crabs and lobsters are caught in great numbers on all these coasts, and are brought to the excellent fish markets at a reasonable price. It has been stated as a curious fact, that the male of the common crab is more frequently caught than the female. The velvet crab and the spider crab are also abundantly met with, and are brought in quantities to the markets. At Sark, and on the coasts of Guernsey, lobsters and cray-fish are most abundant, and are caught in such numbers as to be exported to England, France, and Jersey.

The supply of fish is most abundant in Guernsey, where a very superior fish-market has been erected for its sale. The quantity of this excellent food brought there for sale is sometimes very great, and in addition to supplying the local demands, much of the produce

of the fishermen is sent to Jersey, France, and England. The farmer, the pilot, and the fisherman, aptly observes Mr. Lukis, "are often united in the same individual, and by the active and successful exercise of these occupations a valuable class of men is preserved to the island. The common conger is often caught of a very large size, and is freely used as an article of food by the inhabitants.

There is not much in the Zoology of these islands calculated to interest the naturalist. Their area is so very limited, and their physical characters are such as not to afford an opportunity for the existence of many species in a wild state. Among domestic animals, however, the Alderney cow deserves notice, and has long enjoyed a wide celebrity for the excellence of its character as a source of milk and butter. There is a great contest between the farmers of the Channel Islands as to the respective merits of their cows. In Jersey the farmers declare theirs to be the only genuine cow; but in Guernsey, and in Alderney, the same assertion is made by the occupants of those islands with respect to theirs. It is stated by an historian of the last island, that the only pure race of these animals is to be obtained in Guernsey. These cows are larger, taller, and darker in colour than those which are usually sold in Eng-

land as "Alderney" cows, which come from Jersey and are rather cheaper. These docile and beautiful creatures are greatly cherished and valued in all the islands. The treatment of these animals is thus described by an old author:—"It is true that in summer she must submit to be staked to the ground: but five or six times in the day her station is shifted. In winter she is warmly housed by night and fed with the precious parsnip. When she calves she is regaled with toast, and with the nectar of the island—eider, to which powdered ginger is added." The system of tethering these animals, arising out of the very limited pasturage they enjoy, although apparently a hardship, very probably conduces to the production of more and of better milk, for the cow is thus prevented from exhausting any of her strength in wandering about in search of food. The practice is universal, applying to other animals equally with the cow, and submitted to with tolerable equanimity by those which in England would ill endure the restraint. A true Guernsey cow must, in order to be considered thorough bred by the local Agricultural Society, possess twenty points of merit.

The butter produced by these cows is of a golden yellow colour and of an excellent flavour. The milk appears extremely rich in this sub-

stance, but is quite unsuited for the production of cheese. The general average supposed to be yielded by a cow of the pure breed is a pound of butter daily throughout the year, or about eight quarts of milk. In summer some of the best cows will, it is said, yield fifteen pounds of butter weekly!

From the position of these islands it is easily conceivable that they are occasionally visited by migratory birds (and other animals), but the local residents are not very varied. The wild swan and duck are frequently seen passing southward, and woodcocks, snipes, quails, rails, and plovers, are stated to appear in their season on the islands. The red-legged partridge was formerly a resident of Guernsey, but it has long been extirpated, and is now only occasionally met with as an importation from France.

Of late an attempt has been made to propagate the silk-worm for the sake of its produce in Guernsey. A zealous lady, residing formerly in Hampshire, made many experiments with a view to determine the disputed fact, whether the culture of the silk-worm could be profitably carried on in the southern districts of England. After a trial of some years, in the course of which she introduced a fine variety of the mulberry from the Philippine Islands for the food of these insects, she succeeded, and

appears to have established the fact, that this is possible wherever the requisite care and intelligent supervision can be bestowed—the climatic temperature of course being suited to their tender constitutions. In Guernsey, where the climate approximates so nearly to that of regions much further south, and where the temperature is so wonderfully uniform,—where vegetation is so luxuriant, and intelligent persons, not wanting in skill for the management of the worms, are to be found—the experiment appears even more hopeful. To a certain extent it has been tried and attended with success; and a Company has been established for its commercial prosecution. Specimens of the raw and manufactured silk produced in Guernsey by this company of silk-growers were shown at the Great Exhibition of 1851. On the same occasion were also exhibited a series of beautiful specimens of manufactured silk produced by worms reared by Mrs. Whitby, the individual before mentioned, at Newlands, in Hampshire. It may be hoped that this effort will not fail of due encouragement in the Channel Islands, for while it may be often doubtful to what extent the worms may be profitably reared in many parts of England, in consequence of the comparative severity of the climate, this obstacle certainly has no existence there.

The following portions of a letter from a zealous entomologist in Guernsey will give a few interesting particulars about the insects of the Channel Islands :*—

“ You may still remember that I, some two years since, called on you with a species of *Tetrarynchus*, taken from the scabbard-fish. Since that time I have pursued the above subject, chiefly with the view of comparing the Entomology of this island with that of the neighbouring countries of England and France, but also to ascertain whether this branch of our Fauna has the same type of the tropical or warmer latitudes as our Ichthyology *seems*, and our Conchology and Cryptogamic Botany unquestionably do hold.

“ It was interesting to ascertain, further, whether some species which are rare in England or France were not so here, and vice versa. And I may here mention the peculiarity which obtains in this island, in which we somewhat resemble Ireland, viz. *the total absence of the mole, the toad, water newts, &c. &c., and among the more commonly known insects, the glow-worm, the Lucanus cervus, many of the larger Lepidoptera*, and I should have added, the only one of the snake form we possess is the common blind-

* Dr. F. C. Lukis, in a private letter to Wm. Yarrell, Esq. published by the author's permission.

worm. It may have been from a knowledge of these facts among our forefathers, that the designation of *La Sainte Ile* was given to Guernsey, and memorialized by Drayton in his ‘Polyolbion’ in the same character.

“ Now the islands of Jersey and Alderney possess numbers of the above, particularly the mole and the toad, yet the islands are only twenty miles apart from Guernsey. Again, the Island of Herm, scarcely three miles from this, has a different Entomology; there I find *Nebria complanata*, but never have I seen it here. In Sark I find quite a different catalogue. There the *Cetonia aurata* is common, but exceedingly rare here. Though the black variety may be sometimes taken on the cliffs on flowers of the Rag-wort, also the *Pavonia minor*, &c., yet the distance from Guernsey is about eight miles, and this difference obtains in many other genera and relative quantity of species. I have merely alluded to the more generally known insects. As regards the comparison with England, I must acknowledge we cannot boast one half the insects of that country, yet we have some of the rarer varieties and species. As, for a general instance, *Astynomus aedilis*, *Onthophagus taurus*, *Vacca*, &c.; and one unnamed in Stephens’ work, which is not uncommon, though local, affecting open sandy plains. Several

among the *Histers*, a *Lixus* and also a *Bradytus* (?) I have found in damp places on the coast."

The fact alluded to by Dr. Lukis of the peculiar character of the fauna of each island is interesting, although only a very few instances in confirmation of it are adduced. The same fact, only in a much better marked degree, and on a larger scale, has been observed by Mr. Darwin in the natural history of the Galapagos Archipelago. A portion of his remarks we shall here extract. He says, "The different islands to a considerable extent are inhabited by different sets of beings. I never dreamed that islands about fifty or sixty miles apart, and most of them in sight of each other, formed of precisely the same rocks, placed under a quite similar climate, rising to a nearly equal height, would have been differently tenanted." Such proved to be the case in a most remarkable degree, in the ornithology and other portions of the natural history of this Archipelago. The fact is certainly very difficult of explanation. "I must repeat," observes Mr. Darwin, "that neither the nature of the soil, nor height of the land, nor the climate, nor the general character of the associated beings, and therefore their action on one another, can differ much in the different islands." Yet several of the islands possess their own peculiar species of the tortoise, mock-

ing thrush, finehes, and numerous plants, unlike those of the other islands, and nevertheless allied to them, although peculiar to each. The same circumstance, as has just been observed, although in a greatly inferior degree, marks the natural history of the Channel Islands; and it is quite possible that this might be made still more evident if the attention of competent naturalists were closely directed to its examination.

The fact appears long since in a certain degree to have attracted the attention of Drayton, who, in his celebrated "Polyolbion," gives the following description of the whole group of these islands, with which we shall conclude our present chapter:—

"Thus scarcely said the Muse, but hovering while she hung,
Upon the Celtic wastes, the sea-nymphs loudly sung :
' O ever happy isles, your heads so high that rear,
By nature strongly fenced, which never need to fear ;
On Neptune's watery realms, when Eolus raiseth wars,
And ev'ry billow bounds, as though to quench the stars.
Fair Jersey, first of these, here scatter'd in the deep,
Peculiarly that boast 'st thy double-hornèd sheep ;
Inferior not to thee, thou Guernsey, bravely crown'd
With rough embattled rocks, whose venom-hating ground
The harden'd Emeril hath, which thou abroad dost send.
Thou Ligni,* her beloved, and Sark that dost attend
Her pleasure ev'ry hour ; as Jethou them at need,
With pheasants, fallow-deer, and conies that dost feed,
Thou fruitful Aurney,† near the ancient Celtic shore
Ye happy islands, set within the British seas.
With shrill and jocund shouts the unmeasured deeps awake,
And let the gods of sea their secret bowers forsake."

The Polyolbion, by M. Drayton, canto i. p. 25, Ed. 1622.

* Probably Herm.

† Alderney.



IVY GATE, GUERNSEY.

CHAPTER VIII.

THE AIR AND CLIMATE.

THERE appears to be a very general opinion that the climate of the Channel Islands is of a mild and uniform character. Although their distance from the English coast is not great, yet the difference of annual temperature is considerable, and its effect, combined with other causes, upon external objects of nature, and especially in the vegetable world, is interesting, and deserves our notice. Until lately accurate data were not to be obtained upon this subject; but a distinguished physician and meteorologist,

resident in Guernsey, has collected a large body of facts, and having employed good instruments, his results are of great value to all interested in the natural history of this group of islands. It is also an interesting subject of inquiry to many invalids, as to whether the Channel Islands would be a suitable residence for persons in delicate health, and to this the present chapter will furnish an answer.

The paper published by Dr. Hoskins, and read before the Meteorological Society, will be the source from which we shall derive much of the information in this part of our work, to which it may be useful to add some observations of our own. Since, however, this paper refers only to the climate of Guernsey, every particular it contains will not be equally applicable to the other islands; it will, however, furnish a tolerably accurate general view of the whole.

The character of the vegetation, even out of doors in the winter months, in these islands is sufficient to indicate that the mean annual temperature of the climate must be high. This is about one and a half degree above that of Greenwich, being $51^{\circ} 9'$ on Fahrenheit's thermometer. January and February are the coldest months in the year, and July is the hottest, but August is almost as warm, the observed dif-

ference being very slight. The uniformity between these warm months prolongs the summer, and is highly favourable for the ripening of grain and fruits. In May, June, and July the mean temperature is lower than that of Green-wieh, but higher during the remaining nine months of the year. The result of this distribution of temperature is interesting, tending, as it does, to equalize that of the year. The summer months are cool and bracing, while those of winter, spring, and autumn are mild and uniform. This fact is well known to meteorologists as one of constant observation in places on the coast, and is explained by Mr. Grainger in the following sentences:—

“ In winter, when the air is colder than the water, it takes a portion of the heat from the surface of the sea, which, cooled by being thus brought in contact with the cold air, sinks, and is replaced by warmer portions from beneath, whilst heated air rises and flows over the land. In summer, when the air is warmer than the water, much heat becomes latent by the quick evaporation of the water. The water, changed into vapour, and mixed with the air as an elastic fluid, passes inland, takes a share in the total pressure of the atmosphere, and is of the utmost importance in reference to barometrical variations.” This is the uniform result of the pre-

sence of a large body of water. The sea becomes thus a reservoir of warmth, which in the winter it communicates to the coasts on which it washes, and to the over-lying air. In the summer, on the contrary, it moderates the intensity of the heat, and in this manner renders the whole temperature of the spot not only more equable, but also more salutary in its influences on those of tender constitutions.

The interesting phenomenon, called in the Channel Islands "*Le petit étè de Saint Martin*," is peculiarly well marked; it is also called, "*Le petit étè de Saint Michel*," or the short Michaelmas summer. On this subject Dr. Hoskins makes the following observations:—"The equability of autumn and its duration constitute peculiar features in the climate of Guernsey; for notwithstanding the light south-east breezes of September, the storms and rains of October and November, this season is often remarkably fine and genial, extending even to the middle of December, and abridging most agreeably the duration of winter. So frequent is the occurrence of this second summer, that it is proverbially designated by the peasantry as '*Le petit étè de Saint Martin*,' in consequence of its dating in general from the 10th of October, old Michaelmas, or St. Martin's-day. The enduring foliage of the Guernsey elm, and

the length of twilight, favours the illusion, and completes the reality of this summer dream." This partial return of summer is not peculiar to these islands, but has been repeatedly noticed in other localities, in which it is known among the common people by various names of more or less significance.

The equalizing influence of the waters surrounding these islands on its winter temperature, has been before noticed by the writer in another work, a sentence or two from which he may be here permitted to extract:—

" In consequence of the low radiating properties of water, the temperature of the ocean is much less subject to variations than that of the air, and those which do occur are small in amount. The result of this is, that the air overlying the ocean is much more uniform in temperature than that over the land. In parallels where the range of the thermometer suspended in air over land amounts to twenty or thirty degrees, or even more, a thermometer suspended over the ocean's surface does not range more than five or six degrees. Thus the effect of the presence of the sea upon a climate is to equalize it; and this is remarkably the case in the climatology of small islands. In the Channel Islands, for example, in Guernsey and Jersey, this influence is most remarkable;

frosts are of rare occurrence there, and of the shortest duration, and the extreme of heat is seldom experienced there. In the quarter ending December 31, 1849, the mean temperature of Guernsey was $49^{\circ} 2'$, while that of Greenwich was $44^{\circ} 8'$, a difference of about five degrees.* Thus summer and winter are not separated by the chasm which divides them in the climate of great continents, and the excessive degrees of temperature are almost unknown on either side of the thermometer scale. The influence of such a climate upon the floriculture and horticulture of these islands can scarcely be believed. The most delicate and beautiful plants, which in England must be carefully kept during the winter in our conservatories, and cherished with artificial warmth, are there exposed without injury all through that part of the year; and the markets in summer exhibit an appearance of exuberant fertility of soil scarcely seen in districts much further south than is their position.”†

The winters of these islands are so warm that frost is regarded as a most unusual occurrence. This may be gathered from the evident surprise with which the keeper of a meteorological

* During the present winter, 1853-4, the minimum temperature in Guernsey was never below 30° Fahrenheit; in Jersey it was five degrees lower.

† Chemistry of Creation, 2d Edit. p. 405.

logieal journal, from 1777 to 1844, remarks its having taken place. "Memorandum.—December 20th, 1799.—During the night the weather was so intensely cold, that the water in a jug in my bed-chamber was frozen!" And again: "January 19th, 1838.—This night was so severely cold, that the water in a wash-hand-bason in my room was frozen!" During observations taken by Dr. Hoskins, and extending over nine years, the thermometer only fell below 32° fifty times, thirty-five of which occurred in 1843-4, and 5. These details show that frost is neither frequent nor lasting. The small ponds of water here and there in the island are very seldom coated with ice, and when such is the case, it is very thin and soon passes away again.

From what has been already stated, it will be understood that the difference between the temperature of the day and that of the night is much less in these islands than it is on the main land. The nights are warmed by the temperature of the surrounding waters. But it will scarcely be expected that there should be any considerable difference in this respect between the two principal islands, Jersey and Guernsey. Such, however, is the case, and to such an extent, that it is actually necessary to keep the results from Jersey and Guernsey

unecombined in the meteorological report, on account of the great difference in the ranges of temperature between these two places. This range is very much greater in Jersey than in Guernsey. The causes of this singular and interesting circumstance in their natural history, are probably to be found in the peculiar position of the island of Guernsey.

The nearest continental headland, Cape Flamanville, is at the distance of twenty-eight statute miles, in a direct line to the eastward. In the north-east it is open to the German Ocean, in the west and south to the vast expanse of the Atlantic, without any intervening continent nearer than America. It is, therefore, evident, that from whatever quarter the wind may blow, it is not intercepted by any land of sufficient extent or proximity to prevent its being tempered by passing over a much larger proportion of water.

Dr. Hoskins makes another interesting observation as regards the climate of Guernsey. Most persons are aware that the navigation of the British Channel is often seriously interfered with by the prevalence of dense banks of fog, which envelope every object, and render sailing highly dangerous during their existence. It not unfrequently happens that the mail steamers, on their way to the Channel Islands,

become thus enveloped, and are compelled to lay by, frequently for many hours off the coast of England, and especially in Southampton water, whilst the atmosphere is clear in Guernsey, until the wind shifts, and carries away the dense cloud of mist covering their path. Yet the climate of Guernsey, which is placed in the midst of this Channel, and which might be naturally supposed to be enveloped in the same character of atmosphere, presents a curious example of the opposite kind. The atmosphere of Guernsey is comparatively dry in its nature, although of course not so much so as that of an inland district. Dr. Hoskins, in reply to the question, What becomes of the humidity necessarily produced by the evaporation from so large a surface as the sea around? replies, "The solution is to be found in the heavy rains, the copious dews, the constantly interchanging currents of air between land and sea, and the power of the sun's rays, which during the morning impinge directly on a surface steadily declining from west to east. These circumstances, added to the absence of rivers, marshes, or large bodies of inland water, account for the rarity of land fogs of any intensity or duration. Sea haze, however, is by no means uncommon, especially in spring and autumn, forming what, on the Cornish coast, is called the pride of

the morning, but it dissipates as soon as the sun acquires sufficient elevation ; and, unless in the total absence of a breeze, never spreads to any extent over the land. The springing up of a light breeze, or veering of the wind a point or two from south to west, or east, suffices to disperse the vapour, and restores the blue of the sky to its usual depth of hue and transparency."

To the photographer, as the author of this work can unfortunately testify, this sea haze often proves a most annoying and vexatious feature in the climatology of these islands. Repeatedly, when least expected, when a brilliant sun and blue sky are overhead, the haze will come and shroud the scenery in impenetrable obscurity. More than once or twice has the camera been repacked, and the prepared plates taken home useless. On the whole, however, the frequent changes in the direction of the wind render the sky tolerably free from cloud, and a considerable portion of the blue sky is generally visible in the day, enabling the observer to pursue his photographic studies on inland objects, even when the coast scenery is impenetrably hid from view.

No person can survey the waters around these islands at the ebbing tide, and in calm weather, without being impressed with the perils

likely to arise to the sailor if darkness and storms overtook his ship while yet in their vicinity. And these anticipations are unfortunately only too forcibly realized when gales really occur. The winds which prevail are northerly in their general direction, with an occasional combination of westerly, and less frequently of easterly currents. In autumn and winter the north-westerly winds are strong and boisterous, and are accompanied with rain, heavy gusts and squalls. Gales from this quarter, observes the careful meteorologist just quoted, may generally be foretold by the arrival of French échasse-marées. The island is generally encircled by these storms some days before they appear, and when the masters of these small coasters observe heavy banks of cloud and mist hovering over Cape Frehel, they immediately alter their course and steer for some secure haven. It is seldom that these harbingers of a storm are mistaken, and fortunately so, for westerly gales are in general very fatal to shipping off the coast during their occurrence.

Many deplorable wrecks have been recorded as having taken place on these coasts, and the evidence of one is still perpetuated in a monument in a small church not far from the scene of its occurrence. Occasionally those remark-

able phenomena, called revolving storms, sweep over these islands. Their occurrence is generally preceded by a sudden retrograde motion of wind from S.W. to S.E., *i.e.* against the course of the sun, accompanied by a rapid and considerable depression of the barometer. These storms, though furious, are not prolonged generally beyond twelve hours, and cease as suddenly as they arise.

It has been found that rather more than one quarter of the total amount of rain falling in Guernsey, is collected in two months—January and October. Copious showers at all seasons are not unfrequent, and occur either in the morning or evening, leaving the middle of the day fine. “The loose gravelly nature of the soil,” remarks Dr. Hoskins, “allows of ready percolation, the brisk wind and warm sunshine favour rapid evaporation, so that pedestrian exercise may be taken soon after the fall of the heaviest shower. Charles II., although the founder of the Royal Society, can scarcely be looked upon as a high authority in matters of science. Nevertheless, his well-known remark, that, ‘take one day with another, and you may be out more days in the open air in England, than in any other country in Europe,’ may be applied with much truth to Guernsey.”

It has been aptly observed, that “more conclusive evidence in favour of climate is furnished by the growth of exotic plants, than by thermometric results.” The latter are in fact often very deceptive, and do not furnish an accurate standard of comparison as regards the *felt* temperature. This is often dependent in a great measure on the presence or absence of a current of air, for if a sharp breeze is blowing on one day, during which the thermometer is at a stated point, and if no breeze be felt on another day with the thermometer and condition of the sky similar, the latter day will appear considerably warmer and more agreeable than the former. This is due to the fact, that the evaporation produced from the surface of the body by a current of air always gives a sensation of coldness to the same atmosphere, which without wind is not felt to be cold or unpleasant. In those latitudes where extreme cold is often observed, its effects are by no means so severely felt by the body, if the air be still and calm. The thermometer is therefore not to be regarded as an unfailing index of the sensible temperature of a climate; but the state of its vegetation furnishes a faithful picture of its true characters.

The Channel Islands have been long and

deservedly celebrated for the peculiar luxuriance attained by exotic plants, even in the open air. Guernsey, especially, is remarkable for the extraordinary beauty and vigour assumed by many tender and in England hot-house plants, which thrive freely there. The following observations of Dr. Hoskins furnish a valuable standard of comparison in this respect, with the state of our own gardens and flower-beds. "The frequency with which the aloe flowers, the vast size of the hydrangea, and the profusion of its blossoms, the spread and vigour of the myrtle and Banksia rose, the hardihood of the scarlet geranium, of the American and Mediterranean heaths, but more than all, the luxuriance of the *Camellia japonica*, attest the mildness of the winter season. The latter tree flourishes in every garden and shrubbery, either as a standard or trained against walls; and it is worthy of remark, as showing the effects of acclimatization, that these trees, which on their first introduction commenced flowering in October, remaining covered with blossoms throughout the winter, have become tardier and more tardy in their period of inflorescence with each succeeding year, assimilating more and more to the habits of ordinary shrubs which bloom in early spring."

The following dimensions of three camellias

trained against a south wall eleven feet high, will convey some idea of the size these trees attain. The lateral extent of the double white camellia is twenty-five feet six inches, the girth of its stem being two feet eight inches. The spread of the double red is twenty-five feet ten inches, the circumference of the trunk two feet one inch. The camellia warata spreads eighteen feet six inches, its stem being one foot four in circumference. These trees are covered with blossom from January to April, and flourish in spite of occasional frosts, snow, wind, hail, and rain. Orange trees, also, of considerable size, are to be found in this and other gardens, and ripen their fruit in perfection. These are mentioned as instances, among many, that exotics which grow with reluctance, or not at all, in the mildest districts of England, flourish during winter in Guernsey, and in summer emulate the luxuriance which they possess in their native climates.

It may be desirable, before drawing the present chapter to a close, to state a few facts as to the vital statistics of these islands. To invalids it becomes an important question as to what classes of ailments are likely to be benefitted by residence in these islands; and some information on that subject may possibly prove

useful in this place. In consequence of considerable improvements in the reclamation of land submerged partly by the sea, and kept in a wet state after the waters had subsided, intermittent diseases are scarcely known. These diseases it is well known are most frequently met with in marshy districts, and appear to take origin from the decomposition of vegetable matter in a moist state. In Guernsey a marsh is almost unknown, and ague with its kindred diseases has very seldom, since the improvements in question, come under the notice of the medical residents.

The infantile diseases are generally of a mild type, but occasionally it has been observed that scarlatina assumes a very formidable and dangerous form. This appears to be due to a want of effective ventilation and drainage. This complication of the disease is known in all populous districts in England, where these important particulars are neglected. It is observed by Dr. Hoskins, that from the introduction of vaccination into Guernsey at the commencement of the present century, to the year 1825, small-pox made its appearance only once. It has since then, however, visited the island more frequently, but its occurrence is always ascribable to importation.

It would seem that the most predominant

malady is indigestion, an ailment more justly attributable to errors and excess in diet than to climate. The poorer residents suffer from it in consequence of their unwholesome and insufficient diet of soup, tea, and fish, animal food being seldom seen at their tables. Those of better means suffer from the very opposite cause, namely, an over-stimulating diet, to which they are prompted by the cheapness and abundance of the necessaries and luxuries of life. Asthma is very rarely met with, and those who resort to the island for relief from this disease frequently lose it altogether after a prolonged residence; since it is a spasmodic disease of the lungs, it seems very probable that the reason why Guernsey especially is beneficial to this class of sufferers is, that the temperature is so uniform there, and consequently that these organs are less subject to irritation from vicissitudes in the state of the air, than in less constant climates.

It is very possible that persons of a scrofulous constitution, and those predisposed to consumption, or actually suffering from that disease, will derive benefit from residence in these islands. The state of the vegetation would appear to indicate in a striking manner the absence of rigour in the climate, and the insular position of these places would justify the

belief—a belief confirmed by the results of thermometric observation—that a more constant and equable state of the atmosphere obtains here, than in many districts in England to which invalids are often dismissed. In addition, it deserves notice, that in consequence of the large consumption of sea-weed as fuel, a considerable addition of iodine is constantly made to the local atmosphere of the islands, and no medicine has proved more serviceable than this in the treatment of those diseases to which consumption is closely allied.

It appears that persons from the northern and midland counties of England, debilitated by dyspepsia, but without any other pristine ailment, derive considerable benefit from removal to these islands. But in order to secure its permanently beneficial effects, it is necessary to remain for a year or two. For aged persons, and young children also, it appears that a residence in these islands is productive of benefit. They are also largely resorted to as a transition stage between the East and West Indies and England, by individuals whose health has suffered from long residence in tropical countries.

The elaborate paper of Dr. Hoskins, as already noticed, has formed the basis of most of these remarks on the climate of the Chan-

nel Islands. That paper has an exclusive reference to the climate of Guernsey, and has been compiled with extraordinary pains and care. It is accompanied by extensive tables, exhibiting clearly results of observations carried over several years. This chapter may be taken, although principally referring to Guernsey, as a tolerably accurate picture of the climate of the whole group. The exception, with regard to the daily range of temperature in Jersey, has already received notice. For all practical purposes, the facts here stated are applicable to each of the islands, and they exhibit in a striking manner the great mildness and general character of the climate of the group.



ST. JAMES' CHURCH, ST. PETER PORT, GUERNSEY.

CHAPTER IX.

SPECIAL OBJECTS OF INTEREST IN THE ISLANDS.

IT is difficult to convey a clear idea of the individual features of each island of this group in a work only professing to treat generally of the Channel Islands, and that rather from the point of view selected by a naturalist than from that ordinarily chosen by the general reader. Whilst endeavouring to collect under the general heads which have preceded this chapter all the more prominent features of interest of the group, a little yet remains to be

said about each island separately, in order to complete our picture of them. The present chapter will be devoted to a few brief notes upon each of the group, in which we will set down what may have been unnoticed in the preceding pages. For the purposes of the tourist local guides are easily obtainable, and in those collectively will be found all necessary information on general subjects.

Since notice has already been taken of the small but dangerous group of the Casket Rocks, it will be unnecessary to speak of them here, beyond recalling the fact that they are generally the first object seen on the way to Guernsey, and give intimation, by their rugged characters, of the nature of the scenery of the Channel Islands generally. The island of Alderney is seen away to the east of the path of the steamer, and presents a bold and picturesque object, standing out of the blue water like a great mound, its sides rugged and yellow, and the summit covered with green. The island is four miles in length from north-east to south-west, with an average breadth of $1\frac{1}{2}$ mile, and about twelve miles in circumference. The new harbour of refuge in process of construction by the English government at a place called Braye, on the north of the island, is a work of considerable size, and of much importance; in a

portion of the Channel where nature denies to the mariner any safe anehorage. It is intended to enclose a natural bay by two arms of seawall, constructed of large masses of stone and conerete. These works are still incomplete. Large bloeks of stone are dug from the quarries in another part of the island, and are eonveyed to the spot on railroads, and these blocks, together with vast masses of concrete, are laid down in deep water with the utmost precision, by divers dressed in water-proof elothing, and furnished with helmets, to which air is conveyed by tubes from air-pumps worked above them. Fortifications for the defence of the island are also being eonstructed by the Board of Ord-nance. Since the eommeneement of these im-portant works the population of Alderney has nearly trebled; workmen from the United Kingdom, France, and the neighbouring islands being attracted hither by the hope of finding em-ployment, and detachments from the companies of the Royal Artillery and dépôt of the line sta-tioned in Guernsey being quartered in the island.

The island of Alderney is well known to most persons from the beautiful little cows so much prized in the English dairy, of whieh nearly a hundred are every year exported from the island, and which, from their diminutive size and other peculiarities, appear to be a

distinct race from those of the sister islands. The origin of this peculiar variety of cattle is not, however, to be looked for in the existence of fine pasturage and a fertile soil in this island. On the contrary, its general aspect is that of a barren spot, with little or no pasture, beyond what the sandy downs, parched cliffs, and here and there a field of lucerne or clover afford; but the island is nevertheless not devoid of picturesque beauty, though of quite a different character. The cliffs on the south-west coast, richly covered with lichens, and intersected by deep ravines, rise boldly from the sea to the height, in some places, of 100 or 200 feet; while isolated rocks of fantastic shape add to the wildness and interest of the scene. The highest point in the island is 281 feet above the level of high water, and the land slopes gradually towards the north-east, where the coast consists of low cliffs alternating with small bays and flat shores. Except in one or two sheltered valleys near the town, not a tree is to be seen, nor is the face of the island diversified by the homesteads and cottages so thickly scattered over the other islands. A new church has recently been erected in Alderney, replacing an ancient one which had fallen into decay. The passage to Alderney is generally made from Guernsey in a steamer or cutter.

The island of Herm is next approached, and lies also eastward of the direct route to Guernsey. This little island has been already noticed, as having yielded at one time employment to a number of quarrymen, in the extraction of granite from the excellent quarries. It may be readily explored by leaving Guernsey in a small boat, and its rocks and beaches deserve and repay the attention of the naturalist. The rocks on the southern side of the island are abrupt in their outline, and often perpendicular. The mines and quarries once actively wrought in this island, are now neglected, or nearly so. The Druidical remains in the island deserve attention. Herm is separated from the small islet, Jethou, by a deep but narrow channel. This little spot is singularly placed, and exhibits a curious outline, resembling a green hillock set in the waters, and defended at either end by a smaller hillock. It has but one house upon it.

From an elevated spot on the coast of Herm, a good outline can be obtained of the relative position of the other members of the Channel Island series. Alderney and the Caskets lie behind the spectator, as he looks southward. Sark is on his left hand, with its satellite island, Breehou, or L'Ille des Marehands; and Guernsey lies on the right, prominently con-

spicuous by its windmills, eolumn, and Victoria Tower; and in the remote distance is Jersey, baring her preeipitous and rugged coast to the tidal stream.

Guernsey and Jersey are the islands most frequently visited and best known, and they are, perhaps, the most interesting of the group. In Guernsey we have but a few additional topics of interest for discussion. The large tower, called Victoria Tower, is a reeent structure, and was erected in eommemoration of Her Majesty's visit to the islands. It is plaeed on an eminenee at the upper part of the town of St. Peter Port. It is a square tower, slightly tapering from the base upwards, surmounted by a battlemented gallery, with square turrets at the angles, resting on bold maehieulations. From the eentre rises an octagonal lantern or tower, with lancet windows on every side, and terminated by a battlement and small pinnacles at the angles. The total height is 100 feet. The doors, windows, and other details are in the Pointed style of arehiteeture; and the material is a reddish-eoloured granite, proeured from the neighbourhood of Cobo Bay, in the Câtel parish, the warm hue of whieh, seen against the sky, is far more pleasing than the dull grey of the granite usually employed in the island for building purposes. The sum-

mit is reached by a stone newel staircase, constructed in the thickness of the wall to about two-thirds of the height, and by wooden staircases for the rest of the way. The view from the top is splendid, commanding nearly the whole of the island, all the other islands of the Channel Archipelago, and the coast of France.



ELIZABETH COLLEGE.

Seen from the sea, the tower is a very striking and ornamental object, and is of considerable use as a landmark. The foundation-stone of the building was laid on the 27th of May, 1848, by the lieutenant-governor.

The large building, appearing above many others as St. Peter Port is approached by the

water, and presenting a castellated tower, is called Elizabeth College. It is shown in the cut. This structure is in the form of an oblong square, having a castellated turret at each angle, with a fifth turret larger than the others in the centre of the building. It is an educational institution, originally established by Queen Elizabeth, and subsequently remodelled by the island authorities.

In descending the tower, a beautiful view of the adjoining islands and the rocky coast of this island is afforded to the spectator. On reaching the harbour, and looking back, it will be seen how elevated above the sea-level are many portions of this populous sea-port. The harbour itself is of small size, and quite inadequate to the wants of the town. The piers are constructed of large blocks of granite, which are retained in their place merely by their own weight, as there exists no cementing material to hold them together. A lighthouse at the end of the south pier indicates the narrow entrance to the harbour, to the mariner seeking to enter it after dark. The cut at the commencement of the first chapter represents the harbour seen from the extremity of the north pier, and including the ancient parish church, which is close to the water-side.

Efforts are being now made to construct a

new harbour, enclosing and protecting the old one by the erection of a new pier on the south side.* This part of the coast is well protected by the point of land seen in the cut, which projects into the sea, leaving a small inlet or bay, where, in the roughest weather, the water



NEW HARBOUR, ST. PETER PORT.

is seldom disturbed to any great extent. A fort of considerable size and importance is placed on an eminence at this part of the island, protecting the town and harbour. The view of

* The first stone of the new harbour was laid on the 24th of August, 1853, the anniversary of the Queen's visit to the island.

St. Peter Port afforded from this spot gives the spectator a good general idea of the extent and character of the town.

The town has four churches: the interesting old parish church near the sea; and a new proprietary church, called St. James's, near Elizabeth College; and the district churches of St. John the Evangelist, and the Holy Trinity. It is a populous town, and contains a considerable number of houses occupied by the higher classes. The inequality of the surface on which it is built makes it of a very unsymmetrical character; nor, indeed, does any settled design appear to have been adopted in the erection of its streets and houses. Many of them are of very ancient date, and being built of granite show little indications of decay. The streets are narrow, and awkward in their arrangement, but a good trade exists among the various shops. The fish and meat-markets are structures of considerable size and importance. There is also a gaol, and a hospital which combines the advantages of an infirmary and of an asylum for aged and destitute persons.

It is perfectly easy to make the tour of this island on foot, and its insular character is constantly presented to the mind of the tourist in so doing, since from almost every point the sea is visible, and a walk of a few miles brings him

to the coast from any part of the island. Proceeding along to the north of St. Peter Port, a little village, called St. Sampson's, is entered. It has the advantage of an excellent harbour, from which large quantities of granite are exported. This harbour is protected by a mar-



VALE CASTLE, GUERNSEY.

tello tower and an ancient fortress, represented in the cut, called Vale Castle. The coast on this side of the island is generally flat, but of a rocky character. The old church of St. Sampson is a singular and venerable looking edifice. It is one of the most ancient in the island, and

was consecrated in the year 1111. The granite quarries near the harbour well deserve attention; from their proximity to the latter, large masses of stone are conveyed without much difficulty or expenc to the shipping, which lies awaiting its freight in the harbour. The stone is of excellent quality, and is largely used in the metropolis for paving and macadamizing.

Proceeding in his tour, the coast, with its minute bays, creeks, and inlets, will afford interesting matter for the naturalist's investigation. The rocks are never far from the scene, and often rise in wall-like masses, here and there giving to it a wild and confused aspect. There are four bays on the north-west coast, which are often visited; these are Cobo, Vazon, Perelle, and Le R  e. Of these, Vazon Bay is most interesting, in consequence of its yielding the fossil wood before spoken of, and in the vraicking season it presents a most lively and pleasing picture, the sca-weed gatherers being then out in great numbers, and being occupied, with the assistance of horses and carts, in securing the valued plants for the future fertilization of their fields.

Rocquaine Bay, on the western coast, is undoubtedly the finest in Guernsey; and its picturesque character may be appreciated from the representation before given, which is a literal

transcript of the scene, being accurately copied from a photograph. The outline of this bay is beautifully curved, and nearly in the centre rises Fort Grey, a fortification of considerable strength and of local importance. A number of small fishing-boats are generally seen sheltered in this bay. At its south-western boundary is the little barren-looking island, called Lihou. Access to this island can be had at low water over a rough stony path; but when the tide is in, this path is covered, and a powerful current sets through the channel. The ruins of an ancient priory, represented in the following cut, exist on this wild spot, and are, in parts, in a tolerable state of preservation. There is also a dwelling-house upon the island; its most numerous inhabitants are, however, the rabbits. The rocks are wild and irregular in their character; they are much exposed to the westerly gales and seas. The singular natural baths before alluded to are to be found, by those who do not mind scrambling, on the south side of this island; but to suppose that these excavations were ever really used as baths by the nuns, would imply a much greater facility in climbing over rough and slippery rocks in those days than is enjoyed by women in our own.

Still proceeding with his tour round the

ANCIENT PRIORY OF LIHOU.

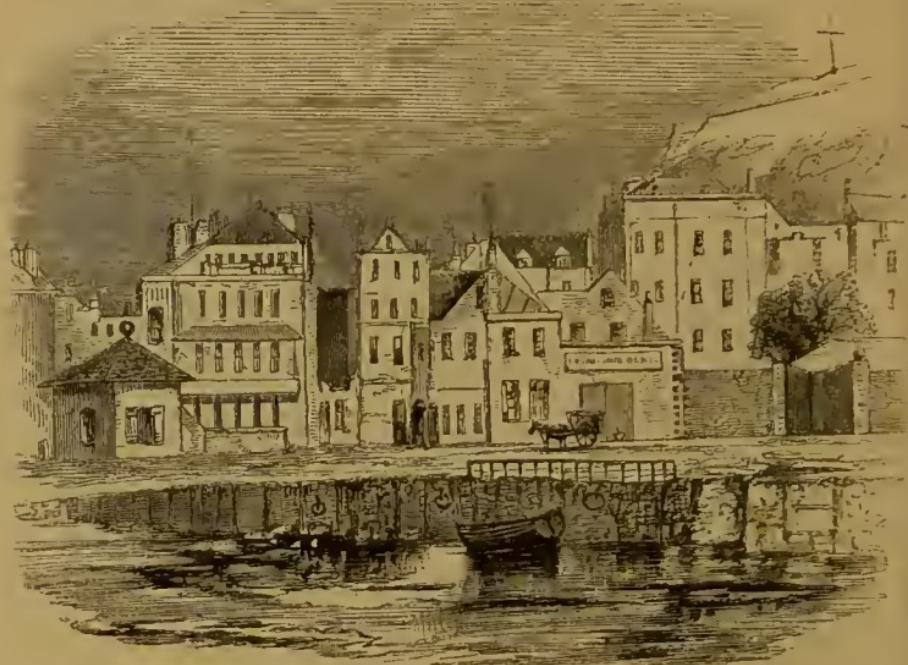


island, the naturalist now enters upon the more imposing scenery of the southern coast. From the promontory called Pleinmont Point, to St. Martin's Point, the western and eastern boundaries respectively of this coast, the rocks rise often perpendicularly to a considerable altitude from the sea, and are indented at frequent intervals with bays, chasms, and creeks of romantic beauty. These have been described in preceding portions of this work, to which reference may be made.

In returning to St. Peter Port, there are many picturesque portions of the various roads by which the town may be entered. The denseness and luxuriance of the vegetation adds great beauty to these scenes, and gives a vivid impression of the fertility of the soil. Occasionally, an old ruin, covered with ivy, will be found by the road side, the history of which is as usual surrounded with superstitious fictions. One of these, called the Ivy Gate, is shown in the cut at the head of the last chapter, and though not constituting a place of any importance, appears entitled to a representation by its venerable and artistic character. The cut is, like others in this volume, taken from a daguerreotype.

The town of St. Heliers, Jersey, to which place the steamer conveys those who purpose

visiting that island, is one of considerably greater size and importance than the more quiet capital of Guernsey. The entrance to the harbour is protected by the fortress, called



ENTRANCE TO ST. HELIERS, JERSEY.

Elizabeth Castle, situated on a rocky island near its mouth, and by the still more imposing fortification, called Fort Regent. The bastion itself is a noble structure, covering a considerable area, and affording shelter to a large number of ships.

Fort Regent, placed on the summit of the town hill, is more than one hundred and fifty feet above high-water mark. It was built about 1806,

and is very extensive, having cost the British nation not less than 800,000*l.* sterling. It is built of granite, is bomb proof, and covers more than four acres of ground, having accommodation for five thousand men. All that human art could do appears to have been called into



FORT REGENT, JERSEY

service to render this fortification inaccessible, with bastions, half-bastions, outworks, and glacis; and except on the side which faces the sea, with a ditch, a counterscarp, and covert way, which encircles it. The well from which the garrison is supplied with water, is two hundred

and thirty feet deep, one hundred and ninety-five feet of which is bored through solid rock; a dozen men can raise the water into cisterns by means of a forcing-pump, and they can thus bring up about six thousand gallons per day.

The smaller fortress, Elizabeth Castle, forming a very picturesque object, outside the harbour, is placed upon a rocky island of about a mile in circumference. It was commenced in the reign of Queen Elizabeth. It may be explored at ebb of tide on foot, but when the tide flows the path is covered; and immediately before this is the case, a bell rings in the castle, warning the visitor to depart before it is too late. On the summit of a rock, near the castle, the rude remains of a hermitage are despatched, the comfortable abode of the saint whose name has been conveyed to posterity by the town of St. Heliers.

This town contrasts forcibly with the quiet little town of St. Peter Port, in Guernsey. It resembles in many respects our English watering places, differing, however, in the character of its inhabitants, and slightly in their costume, in both of which points they assimilate to their neighbours of the opposite coast of France. St. Heliers is, in fact, the abode of a considerable number of French as well as of English

families, and a constant intercourse is kept up between the island and the French coast. It contains several churches and public buildings, including among the latter a new educational institution, founded in honour of Her Majesty's visit to the island.



PRINCE'S TOWER, JERSEY.

A tour round Jersey is not so easily accomplished, in consequence of the size of the island, as that of Guernsey. Out of the many interesting spots which may be thus visited on successive occasions, we shall merely notice a few of the more important. On leaving the

town of St. Heliers, and proceeding in a south-easterly direction, an elevated mound, called Prince's Tower, or La Hougue Bie, is generally visited. This is the chief elevation of Jersey, and commands a most extensive and pleasing prospect. The tower stands upon an artificial mound, surrounded with trees, and is a little removed from the way-side. It is visible at a great distance, and is much resorted to by tourists for the panoramic view obtained from its summit. The mound is said to have been raised to the memory of her husband by the lady of a Norman knight, who had been treacherously murdered near this place; a chapel was erected on the summit of the mound, by one of the Deans of Jersey, before the Reformation; and the present tower was built by Philip d'Auvergne, Prince de Bouillon, a native of Jersey, and admiral in the British navy.

At a little distance from La Hougue Bie is the pretty Bay of Grouville, the northern boundary of which is formed by the rock on which the celebrated castle of Mont Orgueil is built. This venerable ruin is beautifully situated on a rocky headland; its towers are still in many places little affected by the progress of decay, and are clothed with a most luxuriant growth of ivy. Formerly this fortress was a place of some consequence. Charles the Second inha-

bited it for some months after the death of his father, and his rooms are still shown. The well-known Prynne was a prisoner here for three years, and his poetical description of the castle still exists. From an elevation near Mont Orgueil Castle a pretty view of the surrounding country is gained, with the pic-



turesque church of St. Catharine in the foreground.

Proceeding along the northern coast of Jersey, the finest and most picturesque part of the island will become visible. It has already been noticed, that while the northern coast of Guern-

sey is flat, and its southern rocky and precipitous, the northern coast of Jerscy is, on the contrary, steep and bold in character, while its southern shores are flat and sandy. The picturesque bays, coves, and inlets, to which we have before made allusion, lie on this side of the island, and



ST. BRELADE'S CHURCH, JERSEY.

afford occupation for the investigations of the naturalist for many pleasant summer days. On this coast the action of the waves is very violent, and its effects on the rocks exposed to their fury are discernible in many places.

On reaching the western shore the magni-

ficient Bay of St. Ouen opens to view, and contrasts well with the minute inlets dignified with the title of bays on the northern coast. In returning towards St. Heliers, the beautiful Bay of St. Brelade is passed, with the old church near the water side. The village of St. Aubin is the last place of note on this route. This town was once the principal seat of the commerce of the island. It is most picturesquely placed at one extremity of the noble bay, which is bounded at the other by St. Heliers, and the two fortresses, Elizabeth Castle, and Fort Regent. The town is defended by a circular battery, accessible at low water. It is almost four miles from St. Heliers, and is much frequented by visitors and others desirous of escaping from the more bustling streets of the latter town.



GROUP OF OBJECTS FROM THE CROMLECHS.

CHAPTER X.

ANTIQUITIES, LANGUAGE, LAWS, AND CUSTOMS.

MUCH attention has been excited among antiquaries by the abundance of the remains of those curious monuments, called Druidical, which exist in the Channel Islands. A distinguished local antiquary, Mr. F. C. Lukis, has devoted many years to the collection of facts bearing upon this subject; and in our necessarily brief notice of it we shall be dependent

chiefly upon his published accounts for the facts stated. In the Channel Islands, the Cromlech, the Kistvaen, and the simple Macnhir are the most conspicuous forms of these Druidical remains. The cromlechs appear to have been used as catacombs by the Celtic tribes by which these islands were inhabited. The flooring was of irregular flat stones, and round smooth pebbles, on which were deposited the bones, urns, and other vessels left by the affection of the friends of the deceased. Burnt bones and ashes are found in various parts, with bone instruments, perforated stones, amulets, and other articles which were deposited by the side of the remains of the departed friends. Arrow-heads of flint, portions of weapons, implements of stone, and the singular wedge-shaped, sharp-edged instruments called "celts," some of which are exhibited in the cut, are also occasionally found.

The most interesting of the cromlechs, and that to which the steps of every visitor are directed, is one which stands upon a hill on the south side of a common, called L'Ancresse Common, in Guernsey. This cromlech is very perfect, and picturesquely situated, and is represented in the cut on page 355, from a photograph taken on the spot. In the imme-

diate neighbourhood are others more or less perfect, but of smaller size. It is thus described in a local work:—

“ The finest cromleeh in Guernsey is called the Druids’ Temple, and stands on an eminence near L’Aneresse Bay and the Vale Chureh. It is composed of five cumbent stones, decreasing in size from about twenty to ten tons in weight, covering an area twenty-nine feet long, and nearly twelve feet wide. The drifting sands had once completely covered this monument of antiquity, and it was only accidentally discovered in 1811. The remains of several antique earthen vessels were then dug up, and an immense quantity of human teeth and bones, some of them bearing evident marks of fire, which is sufficient proof of its having been a sepulchre, if not devoted to the purpose of human sacrifice. The sands are again gathering round it, and possibly, in a few years, it will have disappeared, unless it is secured by a wall, or some kind of protection.

“ There is another fine cromleeh at Paradis, near Bordeaux harbour, in this parish, consisting of two immense flat stones, lying north-east and south-west, inclining towards the former direction, and supported by a number of smaller ones. This is the most perfect cromlech uneo-

vered, the land round it having been purchased by a private individual for the purpose of preserving it.

"A third cromlech, of smaller size, stands midway on the common, between Mortemar Height and Vale Church.

"A fourth, in a field near St. Sampson's,



DRUIDICAL REMAINS, GUERNSEY.

called Le Champ de l'Autel, which has been preserved, although the land all round it was purchased for quarrying, owing to a superstition which led the seller of the property to warn the new proprietor, that, if ever he removed or

injured the altar, he would never be happy or prosperous. This superstitious feeling is confirmed in the peasants by a singular coincidence, which occurred some years ago, and which they invariably relate to strangers.

“In a field, about half a mile from the church, still called ‘Le Courtil de la Roche qui sonne,’ or ‘Field of the Sounding Stone,’ there was a large stone, supposed to be a Celtic remain, which, on being struck, emitted a clear, hollow, ringing sound, and which was considered as sacred; but, about forty years ago, the owner of the field, being on the point of building a house, determined to make use of the idle stone; when, in spite of all warning, and to the great terror of the neighbours, he unscrupulously broke it up, and used it for supports to his door and window openings. No immediate judgment fell upon the sacrilegious offender; but in less than twelve months his new house was burnt to the ground. He built it up again; and a second time, in a most unaccountable manner, it shared the same fate. Then, resolving not to hazard a third attempt, he sold the stones, and shipped them off for England; but still the same fatality attended him—the vessel foundered at sea, and all on board perished.”

The Logan, or balancing stone, called ‘Le

Roc Balan,' has been found in Guernsey, but, unfortunately, was blasted unawares by some men employed in an adjoining quarry.

In the Bay du Roc, at the north-west point, there is an immense heap of such large stones, evidently of Celtic formation; some of them must weigh full one hundred tons. And in this neighbourhood many antique remains have been excavated, such as cleavers of fine marble, edged and pointed, similar to those which the Druids used for flaying their victims. When they were first found, some of the country-people took them for thunderbolts!

At Herm there exist many evidences of Druidical remains of the same general character as those found in Guernsey. In Jersey, also, a variety of cromlechs and other structures attributed to them still remain, but present nothing sufficiently prominent in interest to render a special notice of them desirable.

The language spoken in the Channel Islands is a species of Norman French. In the towns tolerable English is spoken, though often with a French accent; but in the country districts, although English is very commonly partially understood, the patois in question is generally used. The original stock from which this patois has been derived, appears to have been the old Norman French, but in progress of time

it has received numerous additions and concretions from other tongues, and more particularly from the English language. Many of the words in common use are in fact English, with the addition of a French termination; the result is consequently occasionally very ludicrous. In all probability, as education advances among the poor, the English language will supplant this patois, and this process appears in fact to be now gradually being accomplished. The following lines in the Guernsey patois present the reader with a curious specimen of the Guernesiais. The piece, of which an imperfect extract is here presented, is called, *L'ASSEMBLAIÉ DE PARESSE*, and is a sketch of a parish meeting, convened in the town church, to take into consideration the proposed plan of pulling down Old Fountain Street, and building the present one.

Un matin coum j'etais au marchi¹ dans le skwceze²,
 J'oui la kliòque³, qui sonnait coum si ch'tait pour l'Eglise ;
 J'en d'mandit la raison à une femme qui passait,
 " Ah ! mafai," me dit alle, " ch'est pour pu que j' n'en sait."
 Aussitôt j'rencontri un Moussieu d' Guernezi,
 Qui kwarrait⁴ coum si l'Connetable⁵ étais souventre⁶ li.

¹ Marchi, *market*.

² Skweeze, *crowd*.

³ Klioque, *bell*.

⁴ Kwarrait, *running*.

⁵ Connetable, *constable*.

⁶ Souventre, *after him*.

" Mais pourqu'est che done?" jli démande. " Pourqu'estche done tant d' tripô¹?

" Nous dirait qu' ch'est l'allarme, et k' l'enmi est ilo²."

I' s'arrête un p'tit brin, pour reprendre s'n halaine,

Et mettant ses daeux mains d' chaque côtai d'sa bedaine;

" J'allais scie vous," m'dit-il, " et j'y-allais pour vou keure³,

" Une assemblliaie d' Pâresse s'en va s'faire toute a l'heure."

Divine Service is performed in the parish churches, and justice is administered in the courts in pure French. Although the Channel Islands have been attached to the Crown of England ever since the time of the Conquest, they have nevertheless preserved to the present day their own laws and institutions, based on those of the Duchy of Normandy, but modified by local custom, and consequently differing in some respects in the two bailiwicks of Guernsey and Jersey, the former of these including within its jurisdiction the islands of Alderney and Sark, together with several smaller islets, such as Herm, Jethou, &c.

It is not very easy to say what was the constitution of the islands before their final separation from Normandy, when that province was lost by King John. But it appears probable that, divided as they are from the mainland and from one another, they must at all times have enjoyed in some degree the privilege of

¹ Tripô, *fuss*.

² Ilo, *there*.

³ Keure, *to fetch*.

self-government. No doubt the institutions were modelled in part on those of the parent country, but it is also far from unlikely that they were modified by customs handed down from a more remote Celtie or Gaulish antiquity.

Before the loss of Normandy, tradition informs us that judicinal matters were treated by knights, who held assizes at stated periods, and who appear to have had for assessors the bailiff of the island, and jurats, who were probably chosen for the oeeasion from among the principal tenants of the Crown. But after the loss of that duchy, King John established twelve jurats in eaeh island, as mean judges between the Crown and the subjeet, who were to be chosen for life from among the natives of the island, by the officers of the king and the prineipal inhabitants; and who together with the bailiff were empowered to judge of all eauses arising in the island, with the exeeption of treason, and laying violent hands upon a magistrate in the exeeution of his duty. These laws of King John were collected and committed to writing, in the reign of his successor, Henry III., by whom they were confirmed; and under the name of the Constitutions of King John, they have always been looked upon as the basis of the liberties and

privileges of the islands. This charter has, at various times, been amplified and confirmed by succeeding sovereigns.

Time and local circumstances have naturally given rise to some differences in the laws and constitutions of the respective bailiwicks of Guernsey and Jersey, but, without entering at large on these differences, it will not be difficult to give a general idea of the governments of both islands.

In early times the government of the islands seems to have been committed to one person, in whom was vested both the civil and military authority, and who is sometimes denominated *ballivus* or *bailiff*; but more commonly *custos* or *warder*. This officer, who was generally a nobleman of high rank, received all the revenues of the islands, and appointed his deputies in the civil and military departments, changing them whenever he pleased. From the time of Edward I. the office of bailiff, or chief civil magistrate, appears to have been made permanent; and finally, in the reign of Henry VII. in Jersey, and of Charles II. in Guernsey, the Governors were deprived of the power of naming this functionary, the Crown reserving to itself that right.

The Governor has precedence over all other public functionaries, by reason that he repre-

sents more immediately the person of the sovereign. To him is intrusted the defence of the islands, and, consequently, the command of the military force.

For the last two centuries the office of Governor has been a sinecure, the duties being performed by a Lieutenant-governor, appointed and paid by the Crown. Since the death of the last Governors, no others have been appointed, and the revenues of the islands, after deducting certain local expenses, are paid into the Treasury. Before the Lieutenant-governor can exercise any function of his office, he must present his commission to the Royal Court, by whom he is sworn to be faithful to the Sovereign, and to uphold and defend the privileges and liberties of the island.

The next authority to be noticed is that of the Royal Court, composed of the Bailiff, appointed, as before mentioned, by the Crown; twelve Jurats, elected by the people, for life, and certain Crown officers. The functions of this body are, of course, principally judicial, but they are also in some degree administrative, but less so in the island of Jersey than in that of Guernsey. In both islands, the Jurats are, *ex officio*, members of the States, but their mode of election differs considerably. In Jersey, they are elected by the rate-payers of all the parishes,

which gives rise to a good deal of party-spirit. In Guernsey, the choice of the Jurats is vested in a body called the States of Election, composed of the Bailiff, Jurats, eight Rectors of parishes, and the Douzeniers of all the parishes, and of the four cantons into which St. Peter Port is divided. These Douzeniers are members of a sort of parochial council called the Douzaine, and consisting of twelve or more men elected for life by the rate-payers from among the most influential parishioners, and having certain local duties to perform.

The States may be very properly termed a general council of the island: to them belongs the regulation of all matters of finance affecting the island at large; no tax for general purposes can be levied without their consent, nor can any alteration be made in the existing laws, or any new law be enacted but by them. All such laws, however, still require to be sanctioned by the Sovereign in Council before they can be acted upon. The States in either island are convened and presided over by the Bailiff. The Lieutenant-governor has a seat and deliberative voice. The other members are the Jurats of the Royal Court, the beneficed Clergy, and representatives from each parish. Alderney has also its States, but the Court of that island, consisting of a Judge and six Jurats, has but a

limited authority, an appeal lying in most cases from their decision to the Royal Court of Guernsey. Sark possesses only a feudal Court.

The States, as we have before mentioned, possess a legislative authority, subject to the approbation of the prince, who is the source and fountain of all jurisdiction, and of late years many alterations and reforms in the existing laws have been made in both islands. The authority of the Crown, acting with the advice of the Privy Council, to legislate for the islands, is admitted; but not to the extent of altering the constitution, abolishing customs, abrogating privileges, or levying subsidies without the consent of the inhabitants. Acts of Parliament, in which the islands are specially named, when transmitted from the Privy Council, have also force of law; but if supposed to trench upon local immunities, the registry of them is suspended, or made under protest; and on a representation being made in the proper quarter, the obnoxious order is withdrawn if it be found that the objection is valid.

We have spoken of the peculiar privileges of the island. One of these, to which the greatest importance is attached by the inhabitants, is the not being obliged to answer to any suit instituted against them in the English courts, if the cause have originated within the islands. Causes,

however, may be carried by appeal from the local jurisdictions to the Privy Council. No writ out of any other Court in England runs into the Channel Islands with the exception of writs of Habeas Corpus, and it is only of late years, after a strenuous opposition, that the registry of the Act of Habeas Corpus has been insisted on. It is even now next to a dead letter; for, in the few instances in which a writ has been issued, on its being shown that the person applying for it was incarcerated by sentence of a Court having competent jurisdiction, the matter has dropped without any further investigation being gone into.

Another and valuable immunity is the exemption from taxation for the general purposes of the empire. It is of course clear that communities having no representatives in Parliament could not with any fairness be subjected by that body to taxation; but, besides this, the inhabitants of the Channel Islands have another strong claim for exemption;—This is the personal service which every able-bodied man, in every rank of life, from the age of sixteen to sixty, is bound to perform without fee or reward, in the ranks of the local militia. This corps has existed from the earliest times; and although, in time of peace, only called out for exercise four or five times in the year, is

so steady under arms, and so soldier-like in appearance, as to excite the admiration of all unprejudiced observers.

Before the principles of free trade were carried out to the extent they now are in England, the right possessed by the islands of importing all their produce into the mother country free of duty was a source of great emolument to the agriculturists ; for no duties being levied in the islands on imports, they were enabled to procure supplies for local consumption in the cheapest markets, and to export almost all their own produce to England, where it fetched high prices.

This rapid and imperfect sketch of the constitution and privileges of the Channel Islands will serve to show how large an amount of self-government they possess. This naturally fosters a spirit of independence in the people, which is still further encouraged by the laws regulating the succession of property. The Norman law, which, as we have before said, is the basis of the code of the Channel Islands, does not allow a parent to favour one child to the prejudice of the others. The eldest son has some advantages in the division of real property over the other children, and sons take a larger share than daughters ; but all must be divided in certain proportions among them. The consequence is, the

creation of an immense number of small landed proprietors. These are frequently artisans, such as masons, carpenters, bricklayers, &c.; and the greatest ambition of a labouring man being to possess a cottage and garden or field of his own, and the transfer of land being easy and unembarrassed with troublesome or expensive forms, industry and frugality are encouraged, and pauperism among the indigenous population scarce. Pauperism does exist, and to a large amount in the towns; but the great majority of paupers are the descendants of strangers who have settled in the islands. On the whole, it may with safety be affirmed that the laws and institutions of the Channel Islands have tended to create a happy, contented, and industrious population.

A population so peculiarly situated as that inhabiting the Channel Islands, will naturally be supposed to have retained many local habits and customs. Lying within sight of the coasts of Normandy, and speaking the same language as the people of that province, with whom, in time of peace, they kept up a constant intercourse, nothing would be less surprising than that they should have retained the same manners and customs. This, however, is far from being the case, and the fact may be easily accounted for.—Although speaking a dialect of French, it

must not be forgotten, that for eight hundred years they have been subjects of the British Crown, a distinction on which they highly pride themselves, for, though glorying in the name of Norman, no greater insult can be offered to an islander than to call him a Frenchman. The difference in religion is another cause which has tended to distinguish them still further from their continental neighbours. The doctrines of the Reformation penetrated into the islands at an early period, and the Governors of both Jersey and Guernsey in the reigns of Queen Elizabeth and King James I., being inclined to the party of the Puritans, the Presbyterian form of church government was established, and prevailed in the former island until the reign of Charles I., and in the latter until the restoration of Charles II. The Presbyterian clergy appear to have possessed considerable influence even in civil matters, and to have used it in eradicating all customs which, in their opinion, savoured in any degree of the ancient superstition. The increased communication with England during the last half century, and the great influx of artisans and labourers, principally from the western counties, are gradually modifying any remaining peculiarities; and already many customs may be looked upon as things of a bygone age, being only remembered

by the older members of the community. Still there are some things, even in the every-day occurrences of life, which strike a visitor as strange, and of these the manner in which the land is laid out and cultivated is among the first that attracts attention. To a person accustomed to the broad fields of England and the culture of one particular cereal or root on a large scale, the small inclosures of the Channel Islands, each containing perhaps three or four different crops, appear like mere patches of garden-ground. The universal practice of tethering the cattle, instead of allowing them to roam at large in the meadows, is another peculiarity, but this, as well as the careful culture of the land, is prompted by a spirit of economy which strives to make the most of every available inch of ground, and is rendered necessary by the large population, which is calculated to be above a thousand persons to every square mile. Nature has given to the Channel Islands a mild climate, a fertile soil, and an inexhaustible supply of manure in the sea-weed which covers their rock-bound coasts.

Another agricultural custom is the deep ploughing for the parsnip crop, or, as it is called, "*la grande charrue.*" For the successful culture of this valuable root, it is found necessary to turn up the earth to a considerable depth, and

this is effected by means of a large plough, drawn by four or six oxen, and sometimes twice as many horses. So large an array of cattle is not to be found on one farm, and the work is therefore performed by a contribution of the neighbours, who are repaid by the like joint-stock assistance, the whole being attended by a sort of holiday bustle, that cannot fail to surprise a stranger. It is, in fact, a holiday, for besides being regaled with cakes and cider during the work, those who have given their assistance are entertained in the evening by the proprietor of the field with a substantial supper.

The inhabitants of the islands, and those of Guernsey in particular, are a holiday-loving race. Two days at Christmas, as many at the New-year, Easter, Whitsuntide and Midsummer, are devoted in Guernsey to amusement. Servants, when they engage in families, stipulate to be allowed to have some of these days to themselves, and in most households cakes are made on these festivals. It is usually at these seasons that the Militia is reviewed, and the exercising grounds then become centres of attraction to all classes. In both islands the continental custom prevails of paying visits of congratulation on New Year's Day to friends and relatives, and to persons holding official situations.

In Jersey the great holiday of the year is Easter Monday, at whieh time people from all parts of the island assemble at Mont Orgueil Castle. Although the day has been changed, this eustom may be traed to the middle ages, when a sort of fair or wake appears to have been held on the 23d of April in honour of St. George, to whom the ehapel in the eastle was dedieated. On the festival of All Saints a partieular sort of eake is made, and in some of the rural distriets of Jersey, and particuarly in the parish of St. John, a singular custom prevails, whieh may very possibly have originated in Celtie times, being still practised in some parts of Brittany and Normandy:—"On Midsummer eve, a number of persons meet together and proeure a large brass boiler: this is partly filled with water, and sometimes metallie utensils of different kinds are thrown in. The rim is then eneireled with a strong speies of rush, to whieh strings of the same substanee are attaeched. When these strings are suffiently moistened, the persons assembled take hold of them, and drawing them quiekly through their hands, a tremulous vibration is exeited in the boiler, and a most barbarous, uneouth, and melaneholy sound produued. To render this grating eoncert still more dissonant, others blow with eows' horns and eonches. This singular

species of amusement continues for several hours; it is termed, ‘*faire braire les poèles.*’”

At Midsummer crowds of Jersey people visit the sister island of Guernsey, and the same season is frequently chosen by the inhabitants of the latter island for visits to their friends and relations in Jersey.

On the last Sunday in July, and on those of the month of August, persons assemble from all the parishes of Guernsey on the embankment at St. Samson’s harbour, known by the name of “*le grande pont.*” The object of this meeting seems simply to see and to be seen, but it is not improbable that it had its origin in some religious festival in honour of St. Samson, who is said to have been among the first who preached Christianity in the island, and whose feast falls on the 28th of July.

It must not be supposed that this love of holidays arises from lazy habits, or fosters idleness. On the contrary, the inhabitants of all the islands are a hard-working and peculiarly frugal race. The desire and opportunity of acquiring landed property stimulate them to industry and repress intemperance.

In the country in Jersey, during the winter season, it is usual for female neighbours to assemble together in a room, where, by the light of a lamp, they sit and knit. During the

time, some tell stories, others sing, and thus amuse themselves, and beguile the passing hours.

In Guernsey this mode of passing the long winter evenings has almost fallen into disuse, but a remnant of the custom still affords an excuse for a social meeting, called "*la longue veille*," which is held on the 23d of December. In former days, when knit woollen articles, such as Guernsey froeks, stockings, petticoats, &c., formed the staple manufacture of the island, it was usual to sit up on this night to finish the work, and to get it in readiness for the market held on Christmas-eve. The reason for the meeting has ceased, but the night is still observed by all classes, as affording an opportunity for family meetings. In Jersey a similar excuse is found in the preparation of a kind of conserve of apples, which is used for spreading on bread in lieu of butter when that article is scarce or dear. A number of neighbours assemble together, and all employ themselves busily in paring and carefully cutting out the cores of apples, which are then put to stew with a certain quantity of cider and sugar until they have acquired a proper degree of consistency.

Some superstitions still linger among the people: notwithstanding the march of intellect

the belief in witehcraft is still very prevalent. Holy wells are still resorted to for the cure of diseases;—an innocent kind of hydropathy, probably quite as efficacious as the more scientific appliances of wet blankets and watering pots.

We have thus completed our sketch of these islands. Upon all those subjects in which a naturalist is likely to feel interested, we have endeavoured to give all the information which, with some diligence in search, and by personal investigation, we could collect; and these are subjects which no description of these islands hitherto published has minutely given. The ordinary topics of interest minutely detailed in Guide-books have been merely glanced at in the present chapter; and for all who require information on these and kindred subjects, the works published in Guernsey and Jersey will be best consulted.



APPENDIX.

The following Letters of Mr. Lukis, published in a local paper, will be read with interest by all naturalists, and are here reprinted in the form in which they were originally published.

APPENDIX.

LETTER I.

To the Editor of the Star.

SIR,—The late severe gale, although deprived of the awful easualties too frequently accompanying the storms on this coast, has left many traces of its fury and power, by the removal of gravel and sand from one place to another on the shore; but nowhere has the force of its waves been more visible than in the drifting up of large masses of peat or submarine forest, which extend over a great part of the flat shores of the west and north portions of this island. At the low spring tide of Monday and Tuesday last the prevalence of the gale caused the breaking up of the peat-bed at Vazon bay, and it was during this period of its continuance that the masses of this substance were observed driving up towards the land at the flowing of the tide. The alluvial bed of sand and gravel on which this stratum of vegetable matter rests, became exposed to the fury of the waves at low water, and the substratum once removed, the bed of wood and peat was uplifted like an ice-floe, and carried to the land by the force of the waves.

It is in Vazon bay espeially that the extent of our submarine forest is observed, although the same sub-

stanee is found in many parts of the eoasts of these islands. It is a wide bay, having an extensive flat bed of sand superimposed upon the vegetable deposit beneath it, and whieh extends beyond low-water mark, far towards the west and north under the sea. It is somewhat difficult at present to place the original barriers whieh once opposed the encroachment of the waves upon the land. The present rocky islets and breakers may, however, be supposed to show the extent of the outer line of coast—a natural accumulation of drift may readily be eoneived as then limiting the inroad of the sea, and serving as a protection to the forest lands spread within this area.

This ancient forest, which was still in part occupied by the early inhabitants of this island, has now disappeared, and it is only known to have once existed by the arduous operation of digging through the sand in this locality, for the purpose of obtaining it for fuel.

The force of the late storm has, however, proved a "God-send," or as its local name imports, "a gift"—corban—known with us as "*gorban*."

Its appearance on Tuesday last was truly interesting. Trunks of full-sized trees, which once grew on the spot from whence the waves now were for the first time dislodging them, accompanied by the meadow plants whieh once ornamented their grassy habitation—roots of rushes and weeds, surrounded by those of grass and mosses—gave evidence of the luxurianey of the locality. These roots exhibited a lengthened period of growth, and, like some other bog plants, they grew upwards as the vegetable covering increased, leaving their dead roots and fibres below to add their quota to the further accumulation of vegetable matter.

The very perfect state in which these trees were, shows that they have been for a long time buried under sand. The compression of their trunks and boughs

exhibits the first indication of that flattened form which all fossil plants undergo by the slow decomposition of the vegetable fibre without entirely destroying the texture of the wood.

These trees, when uncovered by the sand and gravel which form the bed of the sea, are overspread with corallines, fuci, and sertulariae, although these marine productions do not appear favoured in their growth on this vegetable matter.

Some of the trees and portions of boughs having become stranded and separated from the peat-bed on which they grew, were at first mistaken for portions of some wreck; and this gave rise to the report so generally current during the gale, that some vessel had foundered on the coast. Another appearance of the wood above alluded to was the numerous perforations in it, which looked like the bolt-holes of ship timber. These perforations were the work of the pholadea; and the amateur had a good opportunity of enriching his collection with a fine series of the *Pholas daetylus*, from four to six inches in length.

This shell is rather a stranger to this coast, and, though an inhabitant of both sides of the British Channel, has not been found in the living state on this shore.

The absence of limestone rocks may in some measure account for this. The mode of burrowing into a stone, sometimes of considerable hardness, has employed the reasonings of naturalists for a long time. The lithodomi are well known for their power in boring into stones, but why the pholadea above mentioned should prefer the peat timber is yet to be known; certain it is, that if Olivi and other zoologists were doubtful of the habit of *Pholas daetylus* as regards their perforating wood, the question may be set at rest by the examination of our gorban and forest timber; and as this shell is still

retained among the lithodomi, they must be now also considered as deserving the already assigned term of *xylophagus*.

The extent and varieties of Gorban on these shores would be a subject which would scarcely be admissible in the limits of your paper; if however, Mr. Editor, you have no objection, I may resume this subject in a future number.

F. C. L.

LETTER II.

To the Editor of the Star.

SIR,—By your permission I shall resume the subject of my letter inserted in your paper of last Monday.

The only three varieties of shells hitherto discovered in the submarine forest or gorban are: *Pholas dactylus*, *Pholas candida*, and *Pholas parva* of Montagu (not decidedly the young of *Pholas dactylus*, as questioned by De Blainville in the Dict. Nat., p. 530). All these were in their dead state when found, and their condition gave evidence of the manner of their death. It is the habit of these shells, as of most of their congeners, to inhabit substances either partly immersed just below the surface of the bed of the sea, or where they can have ready access to it; and as they receive their nourishment from that element, they become liable to suffer from such changes as may withdraw the advantages of their situation. Every change, therefore, which affects the bed of sand and gravel, may cover their habitats some few inches and cause their death.

To this may be attributed the condition in which they have been found, and the reason of their shells being filled by extraneous substances not immediately connected with the peat itself.

Another fact of much interest to the antiquary is, that pottery and stone instruments—the tools and vessels of the first inhabitants of these islands, materials in character coexistent with our Cromlechs, and those contents recently discovered within them, formed of the same substances and in every respect connected with the rocks which erected them—have been from time to time found in the vegetable deposit in Vazon Bay. It is also reported that several hundred Roman coins were discovered in the peat some years ago. I learn that the neighbourhood of La Mare Carteret, near Cobo Bay, was the favoured spot where these were found.

The teeth of horses and hogs have likewise been discovered in the peat. No human remains have as yet been found. The antiseptic quality of peat and bog is well known, and the abundance of tannin which is contained in them might have easily produced remains of our race in good preservation. Acorns and hazelnuts—the latter the produce of a tree not productive, and scarcely to be seen in this island—have frequently been observed.

Let us take a rapid survey of the coast line, commencing with the hills near Pleinmont Point in Rocquaine Bay, and continuing our view over Vazon and Cobo to the north of the island, and then terminate near the town. We here find an almost uninterrupted level flat of low but fertile land. In most places it skirts the base of those hills which form the elevated part of our island, and its limit is only a slightly raised embankment, which defends it from the incursions of the high-water waves.

Over this extensive margin of our island the imperfection of drainage has greatly encouraged the growth of bog and peat; and this substance is still frequently dug up from ditches which are now more generally

construted for the purpose of draining these ancient meadows. This laeustrine area is now tolerably firm upon its surface, but beneath it there are regular sedimentary deposits of sand and peat; and these, again, appear laid over the diluvial materials of an early date. In the neighbourhood of La Grande Mare the deposit has been cut to a considerable depth, and it is stated that two twelve-feet boards in succession have been sunk and disappeared in some of the boggy or more fluid spots.

This now brings us in connexion with the gorban of the sea, and we must also suppose that the sub-soil drainage communicates with it in many parts.

The north-west coast does not appear so favourably disposed for the growth of timber, and here we find the peat less woody and more compact in its structure. This part of the coast is much more interrupted by rocky hillocks, and consequently a more shallow depth of soil prevails. The Grand Harbour Bay and the Braye du Valle offered a more favourable bed for the unmolested accumulation of soil and vegetation, and therefore we again meet with it at low depths beneath the sand or recent bed of the sea,—which was only excluded by an embankment near the Vale Chureh, in 1808, and by which five hundred English acres were converted into arable land.

The stratum of peat which is spread over the area of the Braye we shall not be at a loss to connect with the peat-bed under the sea, the destruction of which may likewise date with the successive encroachments of that element which we have been considering.

The church of the Vale, its priory, and other antiquities, denote the existence of this inland sea; so that the change we allude to must have occurred long before the introduction of Christianity in this island.

We have again proofs of the recent accumulation of

sand over the once Celtie ground of Laenresse, where the various eromlechs in that district are planted upon a soil which is unaceompanied by sand. The stone lines and divisions near these, and on the hills overlooking this plain, show their freedom from the silted sand which now covers them to the height of ten or twelve feet. Again: on this plain, where the sandy hillocks prevail, we find pottery and other ancient relires eoeval with the same materials generally seen in the contents of these ancient sepulchres of our aborigines. A series of sections of this super and substrata may be seen in the first volume of the British Archaeological Society, where this subjeet is fully treated of.

I shall continue the subjcet in a future letter.

F. C. L.

LETTER III.

To the Editor of the Star.

SIR,—The Braye du Valle, the once forest land of this part of the island, exhibits all the gradations which geology would require in the explanation of its present state. The wide-spread layer of sand, elay, and gravel over this area shows the work of a quiet sea, which gradually carried materials and deposited them over the forest land, whilst at the same time the fresh water courses and land drains brought down earthy matter, and thus added their quota to the aecumulating efforts of the daily tides which rode triumphantly over this extensive plain. Across this wide bed of the sea there was a eauseway of large stones for foot passengers at low tides: it was commonly ealled Le Pont Colliche, and probably was the work of the monks of the Abbey

St. Michel: near it stood a cross to remind the weary pilgrim of the dying love of his blessed Saviour. The stone base of this reliquary is at present in the yard of the farm at Les Grandes Capelles, where it was removed on the demolition of the causeway. By the recent works constructed to regain this spacious basin, where, only a few years since, we were accustomed to see numerous boats spreading their white sails over the bosom of this inland sea, a new vegetation and soil are now forming. This new and artificial covering may again become forest land, and again, in its turn, create an upper bed of peat for future generations. The section would consequently stand thus:—

1. Recent vegetable deposit.
2. Alluvium (sand, clay, gravel, and beach stones).
3. Peat, or bogland.
4. Diluvium (sand, gravel, and rolled pebbles).
5. Granite.

Proceeding round the north coast of the Valle, we arrive at the entrance of the Little Russel, which is a strait now separating us from the islands of Herm and Jethou, and from their ranges of rocks and islets. The formation of this entrance may very probably date with the period of the destruction of the forest land of the west coast of Guernsey. Tradition, however, here fails us, excepting in the common opinion entertained by the natives of this part of the island, that the priest of the chapel of Herm was wont to visit the chapels of St. Magloire, near Paradis, and that he traversed the then narrow strait upon a plank laid from side to side. Although this may be somewhat exaggerated in respect to the date of the fact being within the Christian era, there is nothing to afford an insuperable bar to the narrowness of the strait. The northern shore of Herm is beset by a great extent of rock and semi-isles, some

of them still having green sward reposing on their now isolated summits, on which it is not unusual to detect portions of ancient pottery and stone mullers. Again, the mielles of Herm speak the same tale to the geologist,—and the silt, although somewhat higher, exhibits the same covering as the western shore of Guernsey.

The bay of Herm, with its numerous rocks, offers evident proofs of the foregoing observations; and the sedimentary beds of clay and sand extend from its shore to nearly a mile towards that of Guernsey.

Jethou, with its range of rocks on the south, might probably have been separated from Herm at the same period, and it may be assumed that this island and shore might have formed the eastern arm of a wide bay, which was protected on the west by the heights of St. Martin's and those near the town of St. Peter-Port. Bréhon would then have formed a high cairn overlooking the centre of this semi-lune, and its ancient name perhaps designates an important station we do not at this time value.

The island of Sark—being a table-land, bounded on all its sides by abrupt cliffs—has no shelving shores to admit of a similar edging of vegetable matter.

Having traced the broad outline of this probable low forest land, from the west of Guernsey to the opening of the great south bay near the town, it will only be necessary to say a few words relative to the common opinion entertained by many here, viz. that the low lands to the north and west are the effects of subsidence! a simple statement unsupported by geological observation.

The elevated portion of Guernsey is of gneiss and its intruding series of rocks. The whole of this range of land stands on the granitic base, which is the formation of the Valle and low lands, and consequently in exact geological relation with each other. It is upon this

basc of granite that the residue of transportable materials may be looked for; and in fact we find in the Valle and St. Sampson traets entirely overspread by diluvial deposits. By confounding these last with the more recent accumulation of sand and gravel much confusion ensues. The presence of rolled pebbles, of diluvial formation, with some examples of elevated rocks eroded by atmospheric influence, has added to conjectures at variance with geological fact.

Such is the structure of our primary series of rocks, and a little examination will prove them to be in exact geological relation with each other, excluding on the one hand the possibility of subsidence, and on the other the supposed lowering of the level of the present sea.

If the isle of Portland, or the high hill through which the celebrated Box Tunnel on the Great Western Railway is cut, were to subside—one into the sea and the other into the valley to the north of it—no geologist would feel surprised at this movement, however extraordinary it might be to the common observer.

It is to other causes, then, that we are to look for the present appearance of our low lands and their beds of peat.

To the effects of water courses and drainage, added to the alternate movements and encroachments of the sea, and to the power of the wind in transporting and other detritus, we are to look for a solution to the question before us. The same causes are and have always been in operation throughout the latter period at least of this world's history, and producing results derivable from the continual working and opposing of powerful agents.

F. C. L.

